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The Anne MacKenzie Oration.¹

NATIONAL HEALTH AND MEDICAL RESEARCH.

By HAROLD R. DEW, F.R.C.S.,
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THIS oration was founded by Sir Colin MacKenzie as a tribute and a memorial to his mother, Anne MacKenzie, who, born in Scotland in 1843, later emigrated to Victoria. She lived for many years at Kilmore, where she was well known for her interest and influence in local educational and charitable activities. In our attendance here tonight we pay tribute not only to the memory of her fine character, but also to the filial affection which the foundation of this lecture shows she inspired in her son.

The pioneers of her time risked much, but by their courage and determination firmly established our civilization in this country. When we consider the lack of medical knowledge in those days, the difficulties of communication and the numerous hardships they overcame, one wonders whether we have not become spoilt by the many advantages bestowed upon us by Nature and applied science. We still have difficult problems; they are no less serious than those of old, and we must attack them in the same spirit as our forbears did if we wish to solve them.

The declared intention of the founder was that this lecture should deal with the means of preventing or diminishing disease and disabilities of the human body by the study of preventive measures, and that it should also familiarize the general public with recent discoveries in medical science.

It is my intention to talk to you tonight, doing my best not to be too technical, about some of the

¹Delivered at the Australian Institute of Anatomy, Canberra, on March 2, 1937.

health problems which face Australia today, about what attempts have been made already to solve them, and what is the promise for the future.

Although the theme is old and well worn, the subject of national health is of such fundamental importance to our continued existence as an independent nation that I have no hesitation in bringing the facts before you.

In the years that have elapsed since the beginning of the Great War profound changes have been taking place throughout the world which have so modified the customs and thoughts of people of all nationalities as to have almost developed a new type of civilization. During that period there have been surprising advances in science, and their application, whether in the improvement of the ordinary amenities or necessities of life or as additions to medical science for the betterment of health, has made a wonderful contribution to the comfort of mankind.

At the same time, we are faced with a world in which the majority of the nations exhibit a more intense nationalism than ever before in history. This, with the rivalry engendered by economic difficulties, has led to campaigns which have as their aim the improvement of national efficiency. Largely as a result of the Great War, when it was abundantly proved that freedom from disease—many of us remember the shock we received when so many of our volunteers were found to be unfit for active service—was just as important as the supply of food or munitions, nations have come to realize, some more tardily than others, that the conditions of modern life are often conducive to the development of what has been called a C_3 population, and that, in the event of war particularly, the nation which has the highest average healthy population will be the one most likely to survive.

In this country, too, we are faced with the very serious problem of how we can hope to hold, in the face of external criticism and possibly pressure, this vast country with a small population—a population which is not increasing at a rate comparable with many other countries. Warnings have been sounded on many occasions, and only last month the Federal Minister of Health again drew attention to the fact that Australia must "populate or perish". Yet we still allow young mothers and children to die, in many cases from preventable causes; we still have too much disease of all types and too high a death rate at all age periods.

A rather surprising feature of the present situation seems to be, in spite of the numerous examples in ordinary life of the benefits of applied science, the almost total lack of appreciation and understanding on the part of financiers, business men, educational authorities, politicians, and administrators, of what can be done by the application of scientific methods to health matters. This is all the more regrettable because there is little doubt that a really beneficent dictator could, by utilizing even our present knowledge, incomplete though it may be, practically double the level of ordinary health.

It is, of course, typical of human nature to take for granted what has been done for mankind by medical science and to complain of what has not been done, rather than to acknowledge what has been done; and after all, the progress that has been made since Anne MacKenzie first came to Victoria, has been remarkable and in some ways almost incredible.

For example, the introduction of anaesthesia followed the work of Simpson and Morton; sepsis, which made modern surgery possible and which resulted in a total saving of human life by contrast with which the total destruction of life in the Great War becomes almost insignificant, followed the discoveries of Pasteur and Lister; while the elimination or control of many infectious diseases followed the rise of the science of bacteriology and the gradual development of preventive medicine. Osler⁽¹⁾ may be quoted in this connexion:

Measure as we may the progress of the world, materially in the advantages of steam, electricity, and other mechanical appliances, sociologically in the great improvement in the conditions of life, intellectually in the diffusion of education, morally in a possibly higher standard of ethics, there is no one measure which can compare with the decrease in physical suffering in man, woman or child, when stricken by disease or accident. This is the one fact of supreme personal import to every one of us. This is the Promethian gift of the 19th century to man.

We have seen the practical abolition of a number of terrible diseases, while others are being rapidly controlled. The foundation of the science of preventive medicine was laid with the discovery of the efficacy of vaccination by Jenner, and as a result smallpox, one of the most dreaded and prevalent diseases (few reached adult life in the eighteenth century without being pock-marked), has been, in civilized countries at least, completely controlled. Typhus, a fatal louse-borne disease, which was endemic throughout the world at one time, so that a complete history of its ravages would in effect be the history of Europe for the past four hundred years, has been practically eliminated by simple hygienic measures. Typhoid fever, the so-called colonial fever, which was the terror of our ancestors and which filled our hospitals a few decades ago, is now so rare that we find difficulty in our teaching hospitals in finding enough cases to instruct our students; its occurrence now, in cities and towns at least, is rightly regarded as a civic disgrace. Cholera, too, though still met with in some tropical countries, is today unknown in Europe and America, while the same is true of plague, the Black Death of a few centuries ago.

Diphtheria, one of the greatest killers of children, has been partly controlled, while the efficacy of modern treatment has been amply demonstrated, but, in spite of the fact that preventive inoculation has been proved to be efficacious, the disease is still much too common.

During the past few decades we have seen the transformation of the tropics into places where civilized man can live safely. This has been brought about by the devoted work of medical practitioners

of many nationalities on the control of malaria, yellow fever and dysentery. Today districts once shunned can be inhabited, ports once annually quarantined for long periods are open to commerce the year round, while the Panama Canal was finally cut along the zone where every sleeper of the old railway line was said to have cost a French life.

There are, of course, many other discoveries of more recent date which have had far-reaching effects on the management of disease. The discovery of insulin, for instance, with the modern control of diabetes followed the brilliant correlation on the part of Banting of all the work contributed by many other workers, while the study of hormones and vitamins has gone ahead so rapidly that it is difficult to keep pace with the literature. More recently still, the part played by virus infections has been recognized, and in conjunction with veterinarians much new work has been carried out. It is probable, too, that this will lead to the solution of many of the problems associated with epidemic influenza; and what that will mean to mankind cannot be over-estimated.

Public health activities have developed coincidentally with the advances of medical science, and are reflected in the numerous laws and regulations formulated by governments to protect the people, very often against themselves. These have taken the form of quarantine regulations (to which this country owes its immunity to such diseases as yellow fever, plague, smallpox, and hydrophobia in particular), pure food acts, welfare departments, invalid pensions, medical examination of school children, and many other important activities. All of these are due to the gradual realization by governments that it is a part of their duty to make provision for the maintenance of public health. The full story of the development of public health work cannot be told here, but it is a surprising story of slow but sure progress, often in spite of great difficulties. Our State and Commonwealth Departments of Health have been working unobtrusively in their application of the findings of scientific medicine and are second to none in their efficiency and enthusiasm.

The result of these advances has led to the elimination and control of many diseases, has improved the general health immeasurably, and has increased the expectation of life at most age periods from ten to twenty years.

Many of these facts are no doubt vaguely known to all, but they are apt to be forgotten, and it is wise sometimes to remind people of what has been done for them in the past, because there is no doubt that just as much, if not more, is possible in the next few generations.

Present State of Affairs.

In spite of all this, it is a lamentable fact that the average standard of health in a country like Australia, with its almost unequalled climate, its abundant supply of fresh food, and the origin of its people from a comparatively hardy and

vigorous stock, is, though fairly high as compared with some countries, still much below what it might and should be. Health should be the indispensable right of every citizen, but it is a tragic fact that a large percentage of our people have to dispense with it. A very small proportion of the population, of our cities at any rate, really exhibit that glowing, radiant appearance which denotes perfect health, and there seems little doubt that our descendants will look back on our boasted civilization, with its comparatively high incidence of tuberculosis, its high cancer death rate, its numerous acute and chronic diseases, its relatively high maternal and infantile mortality, its infectious diseases and its epidemics of influenza, to say nothing of the economically more serious common cold, with the same sort of tolerant pity that we regard our ancestors of the middle ages.

We are justly proud of our wonderful hospitals; but they are full to overcrowding, while many of them have long waiting lists and find it hard to cope with all the demands made on them. It is a disturbing fact that in New South Wales in recent years the average number of patients attending hospitals was 684,000, or 26% of the whole population; the figures for Queensland are 30%, while those of the other States are somewhat smaller; and they all take no regard of those patients seen by private doctors. While it is true to a certain extent that hospitals breed patients, these figures reveal in a striking way the incidence of disease in this country. In our hospitals treatment reaches a standard equal to that found anywhere else in the world; but should we not really regard the above figures as a confession of failure, because a large proportion of the patients are suffering from preventable diseases?

In spite of our boasted high standard of living, about which there are many misconceptions, in spite of an abundant and varied food supply, and in spite of a relatively educated people, we still do not utilize our food in the correct way, and nutritional and dental diseases are much too prevalent. This is all the more inexcusable because, thanks to research during the past two decades, we know all the essential facts about the various accessory food factors which are necessary for health, proper growth and resistance to disease, over and above the food needed for the general requirements of the body.

Our maternal and infantile mortality, although low as compared with some countries, is still much higher than it need be, and we cannot with our slowly increasing population afford the tragic yearly loss.

Tuberculosis, a disease which, if people really desired it, could be practically wiped out of this country in a generation, is still responsible for a great number of deaths and for yet more morbidity and economic loss. To a large extent this is bound up with purely economic matters, such as housing, good nutrition, care of dependants *et cetera*, but none of these is insoluble and must be faced if we

are to remove what must be regarded as a national disgrace.

Infectious and epidemic diseases still rage among our children, and whooping cough, diphtheria, scarlet fever, rheumatic fever, influenza, pneumonia, to mention but a few, not only take a fearful toll in lives, but are also very serious, because they so often lay the seeds of chronic diseases.

It cannot be too strongly emphasized that the problem of how to protect children from these diseases and how to ensure their healthy, untrammelled development is the central point of preventive medicine today. The future of our race as regards health depends almost entirely on a healthy rising generation.

In addition to all the killing diseases, there is far too much chronic ill-health, much of which could be controlled or prevented. The degree of suffering and the amount of time lost from work and the lessening of national efficiency from this cause are beyond computation.

The above is by no means the whole story, nor is it unduly pessimistic. This nation must not, as in the past, complacently regard its relatively good health figures, because they are nothing like so good as they should be. The incidence of all disease must be greatly reduced, and there is no reason why we should not build up under our ideal conditions the highest average national health standard in the world.

It may well be asked what are the reasons for this striking difference between what we could do with our existing knowledge and the state of affairs which actually exists.

The medical profession as a whole cannot be blamed, for we have always led in this matter; never before have we had so much knowledge; never before has the average doctor been more competent to treat and advise; and never have we ceased in our attempts to educate and to impress upon the people the importance of prevention of disease.

The story of the advances made by medical science is one of the devotion of enthusiastic physicians who have in many cases made the supreme sacrifice in their attempt to solve the mysteries of Nature and to use the knowledge for the benefit of the people.

Organized medicine, too, particularly the British Medical Association, in its official policy in these matters, has always been far in advance of public opinion. The history, in England, of the introduction of measures calculated to improve national health, shows in almost all cases that this Association has initiated all the big movements. These movements nearly always met with considerable opposition and received the sanction of legislation only after the lapse of years. Similar preventive work is continually being carried out by doctors in hospitals, in special clinics and in the services, while the family doctor, with his close contact with patients in all walks of life, still occupies the front rank in our attack upon disease.

The full story of the contribution of medical science to humanity is a very long one, but it still remains our proud boast as a profession that we occupy a unique position in that we have consistently endeavoured to make the world a place where there is a constantly lessening need for the medical man.

Our university medical schools and our teaching hospitals too have played their part and have done great work, both as regards research into the nature of disease and the application of medical science to treatment. This work has often been carried out in spite of great difficulties, such as lack of facilities, lack of financial assistance, and often the lack of encouragement and recognition. Our research workers, all too few in number, have proved themselves second to none, but some of them have, because of the reasons just given, been forced to go abroad in order to test their ideas and carry out their investigations. Most, if not all, of them would have been happy to have stayed here to attack our local problems if the necessary help and encouragement had been forthcoming.

In these days of commercialism, intense nationalism and political opportunism, the ideals and aspirations of the true scientific worker, often a zealot with little thought of himself, comes as a breath of fresh air in a stuffy room. Men who have the true spirit of scientific investigation are the best product of our people, and I believe that on their findings the whole future of our civilization and in particular our survival as an independent nation depend.

We should indeed be grateful for the fact that so many of them are carried on by an enthusiastic urge to add something to the sum of human knowledge. Few of them gain the privilege of being an obvious benefactor to the species; they know not whether their work will be recognized, nor do they often care, provided they gain the personal satisfaction of having taken a step forward in knowledge and perhaps come to be associated, even in a minor degree, with that brilliant procession of investigators, stretching back into antiquity, who have enriched science and served humanity.

The spirit of investigation, all too rare, should be generously subsidized rather than taxed, encouraged rather than hindered, not only for the sake of the individual, but even more for the sake of the nation.

Nature does not give up her secrets readily—few discoveries of importance are made by chance, the majority being made only by trained workers who are prepared for them. For this reason alone we cannot in this country afford to let our brilliant young men leave us for other countries, as they have done and will continue to do unless we are prepared to subsidize and encourage them.

Nor have our public health administrators, either State or Commonwealth, been to blame in this matter. They have carried out their work with devotion and enthusiasm, often in the face of apathy and even obstruction, and their great record can

be seen in their achievements. Our quarantine system, special laboratories, pure food laws, infant welfare centres, and numerous regulations controlling matters of health and hygiene, are often extolled as a model in other countries, and all this in spite of the fact that these services have been often financially starved and hindered in other ways.

Neither the medical profession, the universities, the teaching hospitals nor the public health services could have done more, nor can they do more under the present conditions without fuller cooperation on the part of the people and their administrators.

As in all other matters of public concern in a social structure like ours, public opinion is after all the real driving force, and in the matter of public health people must be in deadly earnest, for they alone can force the issue. The attitude of the population as a whole to these matters is peculiar, and the people's reluctance to give full support to the attempt to apply the result of science to health and social problems at times seems almost inexplicable. While it is true that ignorance of the importance of the problem and of what can be done is possibly the main factor for this apathy, it is not the only one.

People as a general rule are not trained to judge matters such as these for themselves, and their reactions and behaviour are so inexplicable that one almost feels that these, too, require much more investigation and understanding before we can really accomplish a great deal. While medical science successfully uses scientific methods for the study and control of disease, new cults and quackeries arise and flourish; while palæontologists and others discover indubitable proof of the age of life, certain legislatures have attempted to prevent the teaching of evolution; while physicists develop modern wireless, halls are filled with so-called educated people who talk about such nebulous things as "ectoplasm"; while the astronomer regularly predicts with mathematical accuracy the next solar eclipse, a certain religious sect confidently predicts the near approach of the end of the world; and while the public health services abolish or control pestilences, the anti-vivisection and anti-vaccination societies expand their membership and receive large gifts to oppose the very measures which make such things possible.

This strange belief in the occult and the so-called supernatural is inborn in human beings, who are in this respect but little advanced from our pre-historic ancestors. Even well-educated people have a tendency to accept readily any story which appears to contradict an established scientific fact—perhaps an indication of the very human failing to take any excuse that relieves the individual of personal responsibility.

It seems almost paradoxical that the people, when material things are affected, are quite ready to take notice and spend large sums of money, because, after all, purely financial considerations have much to do with it. Thus we see huge expendi-

ture on armaments and warlike activities, ostensibly for self-protection, but, of course, also potential agents for the destruction of human life. The application of the discoveries of science to industry has made possible a great number of our modern necessities of life. No large manufacturing concern, whether it be for the manufacture of gas, machinery, glass, boots or anything else, can hope to survive modern competition unless the management is prepared to experiment along scientific lines. And yet research as to matters of health and, just as important, the application of the discoveries lag behind. We have seen in our country the great work of the Commonwealth Council for Scientific and Industrial Research, and a similar organization to deal with matters of disease and national health has been, in the opinion of many of us, long overdue.

Julian Huxley has pointed out that in Great Britain research in industry amounted to 50% of the huge sum annually spent in research, while health research amounted to only 10% to 12%, and he naively suggests that if industry really needed a healthy population we should soon get it. All this expenditure of energy, brains and money in industrial research, leading as it does to an increase in the production of food and material, is part of our civilized progress; but surely it is time to ponder over the fact that a large proportion of our people are really not healthy enough fully to enjoy all these advantages.

These peculiar reactions in matters of health have been well summed up by Cumpston⁽²⁾ when he wrote:

There is some fundamental impulse in human nature which prefers the course of least effort with its known dangers to the strenuous and self-denying life with its known rewards, so that parliaments may legislate, departments may regulate, but success is only possible to the extent to which the people concerned intelligently and efficiently co-operate.

What, Then, Can Be Done?

The problem of national efficiency and health is being attacked most systematically in Russia and Germany. These are the only two countries which are spending more than an infinitesimal fraction of the national income on measures calculated to improve national health. Already, I believe, the effect is noticeable, and while the efforts are being watched with interest by the whole world there seems little doubt that they will be rewarded.

The League of Nations, in spite of its failure in some respects, has done a great deal in the international field of health, particularly with regard to standardization of substances, quarantine, and other general problems; and this is an indication of the growing interest of the nations in health matters. Great Britain, too, as is well known, has at last realized the importance of national fitness and is attacking seriously such problems as housing, nutrition, control of disease, and medical research.

The General Medical Research Council of Great Britain, which has been in existence since 1912, has done remarkable work in every branch of medical

research and has set an example which might well be emulated by other countries.

Similar interest is being taken in these matters in practically every country of importance, and this country, too, must be prepared to engage on an intense nation-wide campaign for the maintenance and improvement of national health.

The New Council and its Activities.

As a result of the influence of the Federal Director-General of Public Health, last year Mr. W. M. Hughes, the Federal Minister for Health, by ordinance formed the National Health and Medical Research Council. This council has been asked to carry out the following main functions:

1. To advise the Commonwealth and State Governments in all matters of public health legislation and administration, on matters concerning the health of the public, and on medical research.
2. To advise the Commonwealth Government as to the expenditure of money specifically appropriated as money to be spent on the advice of the council.
3. To advise the Commonwealth Government as to the expenditure of money upon medical research and as to projects of medical research generally.

In the composition of the council an attempt has been made to combine the preventive and curative aspects of medicine and the search for new knowledge in medical science in one comprehensive scheme. In no other country is there a council in which there is the combination of the official administrative agencies representing the social aspects of medicine with scientific and clinical workers.

The council has already met and has already formulated its policy and laid down certain lines of attack on this great national problem.

Education of the Public.

In the first place it has recognized the essential need for education of the people of this country by every possible modern method as to the nature and the importance of the problem.

Until the people realize that our average national health is not satisfactory, that great improvement is possible, that they must be prepared to spend lavishly if they want results; in other words, until they develop a health conscience and health matters become important to voters, administrators and politicians will not be compelled to deal with the problems satisfactorily. The question of how best to educate the people in health matters bristles with difficulties and must of necessity be a slow process. Care must be taken in the presentation of the appropriate facts by the right person in the correct manner, and it is essential that we have full knowledge of all the relevant facts.

The council has this very difficult matter before it at present and has already indicated to the authorities the importance of instituting a definite system of public health instruction by competent persons by means of the printed and spoken word and by means of broadcasting and the cinema.

The Press can be of inestimable assistance in this national work, for, once health rather than crime

or calamity becomes "news", the people will soon become well informed.

It has been pointed out that purely financial considerations have much to do with the problem, and this is naturally closely bound with national economics. It is well known that the incidence of disease varies inversely with the capacity of the person to pay for medical attention, and that poor housing and poor nutrition have a similar basis. It is therefore necessary to impress upon the people the need for heavy expenditure if results are to be obtained.

The importance of nutrition has already been recognized by the Commonwealth, and a Nutrition Committee is at present considering all aspects of this question; its report is expected to be forthcoming very soon.

The public must be informed that the adequate care and supervision of health during childhood are perhaps the most important of all activities. Not only are epidemic diseases, with their relatively high death rate, very serious, but it is during this period that such diseases as tuberculosis and rheumatic fever, as well as various chronic infections, mainly have their beginning. If we could ensure a healthy body and development during this period, a great deal of suffering and inefficiency during adult life would be avoided.

In this connexion it is well to remind you that we spend many years and enormous sums on the education of the mind of the child, but very little indeed on educating him in the matter of health or in developing his body. The council believes that there must be complete supervision of an intelligent kind over the bodily health of infants, pre-school children and school children. It is true that school medical service and infant welfare clinics have developed greatly and that they are doing good work; but in 1933 only 11% of the children of school age were medically examined, and of these it is stated that 50% showed some physical defect, figures which are very disconcerting.

The educational authorities in each State could probably do most to help in this respect. There is no doubt that instruction in the principles and practice of hygiene, prevention of disease, dietetics, and general health problems should be given during school life. This is the most receptive period, and in a generation, provided the instruction was adequate and well organized, striking results would be forthcoming. It has been pointed out by the council that although large sums of money would be involved in the form of governmental or municipal expenditure if the work were to be properly carried out, a great portion would be soon saved by the prevention of conditions which now call for hospital expenditure. In other words, it would be a wonderful national investment, even if considered solely as a business proposition.

The Fostering of Medical Research.

The importance of knowing as much as possible about our local disease problems has already been referred to, and fuller knowledge is essential before

we can successfully attack our special difficulties. Research work must be carried out in all its branches, and the council recognizes the evils attendant upon the neglect or non-recognition of research workers in this country. No more short-sighted policy than the neglect of scientific research in a country such as Australia can be imagined. The enthusiasm of the scientific worker has been exploited in the past; so many of them have been compelled to work for a wage comparable with that of a wharf labourer. Not only fairness, but enlightened self-interest, should cause any community, and particularly ours, to pay competent scientific workers sufficient for them to carry out their important work without financial worry and to give their children, for after all this type must be regarded as amongst the most desirable begetters of our future stock, a good chance in life. Unless this can be done, a great number of potential contributors to human knowledge will be discouraged, and their peculiar talents, which should be devoted to the service of mankind generally, will be wasted.

The council has recognized this, and the policy of stimulating current research work and encouraging new research workers in approved institutes by adequate financial assistance has been agreed to.

Medical research can be divided into three types: (i) statistical and information research, (ii) fundamental or basic research, (iii) clinical research.

The first deals with facts concerning the incidence and distribution of disease, with ætiological factors, with the results of treatment, and with other facts that will comprise the information upon which the council will act. This is dependent upon accurate records and upon close collaboration of hospitals and the various health departments. A great deal of accurate information is already available, but much is still required.

Research in the fundamental sciences comprises all investigation of a purely pathological, biochemical, bacteriological or experimental nature, and although there is a tendency to decry the importance of this type of research, it still remains basic, and many of our most brilliant advances have emanated from this purely scientific side. In addition, it is by far the best type of research in which to train young research workers for work in any field of medical science. The experimental method is still most valuable, and is often the only method of testing a new idea, whether it concerns a new drug, new methods of diagnosis or anything else. This kind of research requires special laboratory facilities, special apparatus and equipment, special technicians and trained investigators who can make close contact with other branches of applied science, because we are finding more and more that an apparently simple problem may involve chemical, pathological, physical and bacteriological factors. Modern methods, too, have become much more accurate, our observations are

becoming quantitative rather than qualitative in all experimental work, and we borrow freely from all the other sciences. This work does not necessarily need close contact with hospitals or patients, but can be carried out with any prospect of success only in the universities and to a less extent in some special research institutions.

Clinical research, as the name implies, means investigation of disease as it appears in human subjects, and owing to its complexity it is one of the most difficult to organize. Though it has languished somewhat in this country, it is still most important, as not only are fresh problems suggested at the bedside, but also it is there that the effects and results of new methods of diagnosis and treatment are tested.

This type of research requires:

1. A good supply of patients suffering from the specific disease, with full access and complete control of treatment *et cetera* by the investigator.

2. Active cooperation on the part of boards of hospitals, who must give encouragement and facilities in the form of special beds, allow patients to stay in hospital for indefinite periods, and provide special nursing and other facilities. All these things mean added expenditure, but are essential for first-class work, and no other is worth the paper on which it is written. Hospital boards have to be educated to the fact that it is their duty, just as it is the duty of a manufacturing concern, to give facilities for investigation, and so to help us to keep on advancing knowledge. One has only to compare the stimulating atmosphere and tone of a hospital in which active investigation is going on, with one where it is not, to realize how important this is in keeping a hospital alive and progressing.

3. Laboratory services. These need not be elaborate for the average type of work, but it must be remembered that even clinical investigation is becoming much more accurate and may need special biochemical, pathological or other examinations. All these can, however, be supplied in the better class hospitals of our capital cities at least.

4. A good system of case records. This is most essential, and it is one which is most difficult to obtain. Records, to be of value, must be accurate and full and readily accessible. I know of no hospital in Australia where the record system and, what is just as important, the follow-up system are complete enough for scientific purposes.

The council desires to encourage and subsidize all these types of research and has made various recommendations. The first is the granting of financial aid to full-time workers in universities, medical schools and research institutes, which are at present held up from completing current research work because of lack of facilities, lack of help or lack of funds. Many of these workers are well trained in their particular field, have original ideas and have research work in progress. It is to them

that we must look in the future for the training of new research workers and technicians.

The council also wishes to make grants to help other workers and to augment some existing grants and fellowships, which, once adequate, are now, owing to the lowered value of money, not large enough to attract applicants. The only condition governing all these grants is that the council must be satisfied that adequate facilities are available, that the worker is fully competent, and that the investigation undertaken is in its opinion important. Another factor which has to be taken into consideration in scientific research is the relative scarcity of trained technical assistants. For some types of work a very long training in scientific methods and accuracy is required, and technicians of this type are hard to obtain. It has therefore been decided that when a research grant is made, sufficient funds must also be provided for the training of technicians, so that in a few years there will be the nucleus of a permanent body of trained technicians available to help future investigators.

In addition to helping existing research workers, a further policy of the council is to attempt to attract young men of the right type into this field. It is desired to endow eight to ten junior research fellowships with a tenure of three years at a good salary, with provision for the payment of a trained technician and a grant for special apparatus and material. These workers would be carefully selected and set to work in approved departments or institutions under the direction of other trained workers in the above types of research.

It is probable that few of these junior fellows will produce much truly original or great work, but the best of them will, and they will amass a great amount of accurate information which will be of value in the future. They will all undergo a training in scientific methods and will, of course, benefit greatly; a number of them will go out into the practice of the profession and introduce the correct leaven for the future, while at the end of their training it will be relatively easy to choose those who are willing and capable of continuing with research as their life work.

From these junior fellows will be chosen from time to time senior research workers, some of whom may have to be sent abroad to complete or to augment their training in special branches of research. All of those selected (they will not be very numerous, because high grade investigators are very rare) must be given the assurance of a permanent position at a good salary and then be employed on special research work.

In this way we should have in a few years the nucleus of a body of well-trained scientific workers to attack such national problems as may arise. At the same time, the present facilities and an adequate supply of trained technicians will also have been developed.

A further function of the council is to attempt the correlation and organization of the various health services. It is essential for the success of the campaign that the status and influence of the public health authorities should be increased. It is obvious that unless there is active and efficient cooperation on the part of the State departments, very little can be accomplished. There are at present a great number of anomalies not only in the different States, but even in the same State. Take, for example, the medical inspection of children in State schools. At present in New South Wales this is the business of the Education Department, and although good work is being done, this should be the function of the State Department of Health, which could correlate it with maternal and infant welfare work generally. There are many other examples of overlapping, of multiple control and of disjointed activities, and it is hoped that the council may be able to do something to overcome these. The council is giving special consideration to the question of how to conserve the health of the pre-school child, the lessening of maternal mortality and morbidity, tuberculosis, rheumatic fever, leprosy, dental disease, nutritional defects, crippled children, and infectious diseases, and it is hoped that each of these national problems will be effectively attacked in the near future.

These, then, are some of the projected activities of the new council. I do not know whether they will ever come to fruition, but I do know that the greatest hope for the future lies in some such coordinated attack on the problems before us. It should be the earnest endeavour of all who realize the importance of the future health of this nation to do what they can to further this important national campaign.

I have made no reference in this paper to the difficult and complex question of the relationship of the medical profession itself to the work ahead. I do not know what will be the outcome of all these developments: whether we shall drift into a form of national insurance, or come under a State medical service, or whether a compromise, so dear to the Anglo-Saxon, will be arrived at. That is not my function tonight, but I know that when it comes to the performance of work in the treatment or control of disease, our profession will, as in the past, not be found wanting.

I still believe that one of the most powerful factors in the fight against disease, whether in respect of prevention or treatment, is to be found in the family doctor, who carries out these functions, now as always, in an unobtrusive but remarkably efficient manner.

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METROPOLITAN AND RURAL INCIDENCE AND DISTRIBUTION OF ACUTE RHEUMATISM AND RHEUMATIC HEART DISEASE IN NEW SOUTH WALES.

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PART IV.

CLINICAL ASPECTS.

THE view has long been held by clinicians in Australia that acute rheumatism in this country presents a much smaller problem, both in point of incidence and of severity, than it does in either Europe or the United States of America; and also that certain clinical features, for example, the occurrence of nodules, are less frequently seen. In order to test the truth of this conception and to observe the clinical nature of the disease as it occurs in Sydney, the histories were analysed of 428 children admitted during ten years with a diagnosis of acute rheumatism to the Royal Alexandra Hospital for Children. Eighty-three further histories classified under this heading were omitted from consideration, as in these cases the diagnosis was not considered to be sufficiently clear. Further information upon the clinical nature of the disease in the country was also forthcoming from the reports of routine school examinations and was considered in Part II. The remarks to follow are based entirely upon this hospital evidence. Of these 428 children, 226 were boys and 202 were girls.

Previous History.

No reliable record was available of the frequency with which these children were affected by premonitory signs and symptoms of the rheumatic infection. Growing pains were, however, very uncommon in the hospital series, although they were frequently noted among healthy school children without any heart defects. Preston, reviewing the findings in four English rheumatic supervisory centres, draws attention to the infrequency of growing pains in children known to have had acute rheumatism. He suggests that many such pains are caused by minor orthopaedic conditions and by focal sepsis. He considers that growing pains have been over-emphasized as a symptom of latent cardiac rheumatism. Vincent Coates found that growing pains preceded rheumatic fever in 31 of 44 school children in Bath, England. Ingerman and Wilson's figure of 78% is quoted as representative in the Ministry of Health Report (1927), which says further:

... whilst the subjective difficulties of their assessment must be admitted, the importance of growing pains (in the absence of obvious arthritis) as a symptom can

scarcely be overrated. They are frequently the earliest warning of rheumatic infection, and constitute, indeed, the "distance" danger signal of rheumatism which may afford weeks or even months of warning.

Sore throats were also as common among the healthy as they were among the affected children in the country districts. They were noted 102 times in the hospital series of 428 children—a much higher incidence. Scarlet fever was distinctly uncommon as a predecessor to cardiac rheumatism, only seven patients in the hospital series being so affected. In many of the hospital cases joint pains had been present for months beforehand, and such children were considered as already rheumatic, not pre-rheumatic. Three children were noted as having had rickets, three had convulsions, one had asthma, and one tuberculous glands of the neck. The possibility of measles and pertussis having some influence on the earlier onset or severity of cardiac rheumatism was investigated, but no such influence was apparent.

Family History.

Only 59 of 428 children (12% of first attacks and 11% of second attacks) had family contact with the disease. The presence of other infected persons in the same house did not appear to produce an earlier onset; patients with a positive family history did not suffer from carditis any more frequently than the remainder. This incidence is much lower than that given by Campbell and Warner (60%), while in 44 children recorded by Coates and Thomas, 21 had an "adjacent" and 14 a "remote" family history. In the Medical Research Council's report (1927) "it was found that in 260 out of 721 rheumatic families, or 36%, there were one or more persons in addition to the rheumatic patient suffering from rheumatism". Further, patients with a positive family history did not develop cardiac complications any more frequently than the remainder. Logan found that 100 of 525 children in Detroit were similarly situated. Perhaps Sydney children are not so closely confined and in such intimate contact with affected relatives as in the denser slums of England.

Age of Onset.

The commonest age of onset of an attack sufficiently severe to admit a child to hospital was nine years (Chart I). Children were admitted in all months of the year in numbers which failed to support the contention that the disease in Sydney is particularly encountered in the autumn or late summer. The admission rate was slightly greater in February and March, which is the hottest period of the year in this city. A similar frequency occurred in July, September and December (Chart II). The children ranged in age from twelve months to thirteen years.

Mode of Onset.

Out of 428 children, 415 complained of joint pains on or before admission to hospital. In 121 of these swelling was also to be detected. The com-

monest joints to be affected were those of the knees, ankles, fingers, wrists and hips, in this order. Swelling was therefore less common than was stated in the Ministry of Health report, according to which

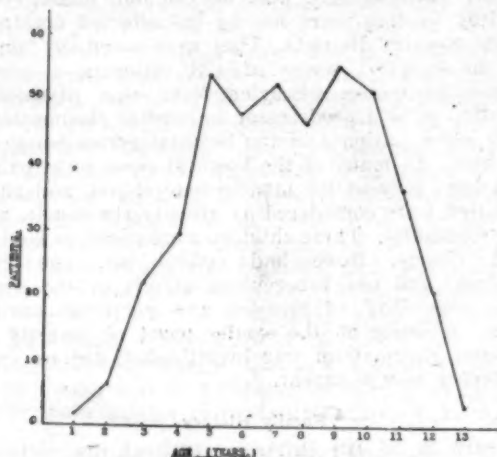


CHART I.

Age of patients admitted to the Royal Alexandra Hospital for Children during ten years. The commonest age of onset is seen to be between the ages of four and nine years. Children of thirteen years and over must seek admission to an adult hospital.

it was encountered in 60% to 70% of cases. Children with joint swelling had no more subsequent cardiac damage than those without swelling. Other symptoms complained of before admission were:

Sore throat: 102 cases.

Vomiting (which seemed to be associated with a severer clinical type of the disease): 40 cases.

Abdominal pain: 35 cases (frequently epigastric, the origin of which is obscure, unless due to an acute spondylitis or, in the case of lower abdominal pain, referred from the hip joint).

Cough or cold: 37 cases.

Stiff neck: 14 cases.

Choreiform movements: 7 cases.

Other symptoms of onset were languor, headache, earache and malaise. The average temperature on admission was 37.8° C. (100° F.). No cases of hyperpyrexia were observed. Horder states that it is now very rare to see the picture of severe rheumatic fever with hyperpyrexia.

Clinical Features and Complications in Hospital.

The following clinical features and complications of rheumatic fever were observed in hospital: Adenitis of the cervical glands was noted in seven cases and of the inguinal glands in four cases; two children had generalized glandular enlargement. I could find no reference in the literature to this last-mentioned sign. It may possibly often be overlooked, as the enlargement and tenderness of the glands are slight, but definite, and usually occur, as in Still's disease, in relation to the joints affected. Pericarditis developed in eight of the 396 non-fatal cases, an incidence of 1.9%. It occurred in four of the 32 fatal cases. Miller states

that pericarditis is also decreasing in frequency. In Glasgow, in 1925, Bertram found pericarditis to be present in 11% of her patients. Pyelitis occurred as a complication in an identical proportion—eight cases. Details of urine culture were not available.

Rashes were observed as follows:

Urticarial	7 cases
Morbilloform (<i>erythema marginatum</i>)	16 cases
Purpuric	1 case
Herpetic	1 case
Scarlatinal forms	1 case
Erythema	1 case
Unclassified	33 cases

These make a total of 60, or 14%. The majority were morbilliform, and this type of rash was often present at or shortly after the onset of joint pains. In some cases it recurred after an interval of two to three days; in one patient it recurred no less than three times. The time of appearance of the rash had no relationship to the commencement or cessation of the administration of salicylates. Several patients were thought to have developed measles and were transferred to a fever hospital.

No Koplik spots were observed in such patients. If the rash appeared late in the illness, it usually appeared approximately three and a half weeks after the patient's admission to hospital. Rashes appeared most commonly in moderately severe cases, but had no relationship to the occurrence of severe carditis or of chorea. Sometimes swelling of the face was observed coincidentally with an urticarial rash and sometimes apart from it. Irritation was not a feature of the rashes, and the blotchy lesions were chiefly observed upon the trunk and legs.

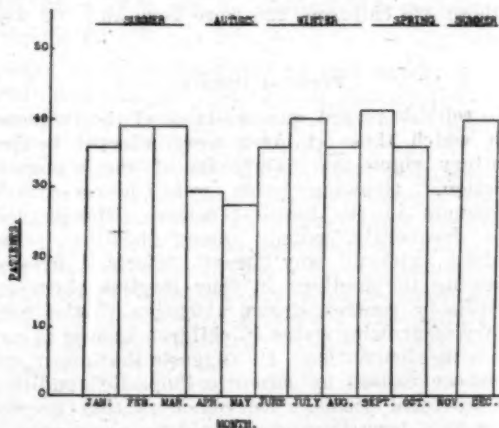


CHART II.

Relationship between acute rheumatism and season of the year in Sydney. No definite seasonal incidence is apparent.

Blood counts were not done as a routine measure, but secondary anaemia was present in 51 children examined. In nearly all the fatal cases the patient showed great pallor. There was nothing characteristic about the anaemia except its rapidity of onset.

Epistaxis appeared to occur more frequently in the severer cases and was observed in twelve instances at or just after the onset of the rheumatic attack.

Nodules.

The almost complete absence of nodules in Sydney children suffering from acute rheumatism has been the subject of previous comment (Harvey Sutton). In this series seven children (1.5%) presented this feature. Four of these had carditis and three remained unaffected. Nodules were seen once in a fatal case. No doubt nodules are often overlooked; and the extreme variation in the findings in different localities perhaps partly reflects the assiduity of the examiner. Bertram found nodules in 7% of patients in Glasgow; Poynton, in from 19% to 28%; Vincent Coates found them in 35 of 44 school children in Bath in 1925. In a control series of 100 consecutive school examinations, 25 were found; and 20 of these patients gave a history of chronic rheumatism. Coates states that, as a physical sign, the subcutaneous fibrous nodule is a small and insignificant variation from the normal, in consequence of which practice is necessary for the clinician to be certain of its presence. Many of his records are probably concerned with the discovery of quite small nodes. Wallace found them in 12% of 124 Chicago children. Benjamin found nodules in 15.6% of 121 rheumatic families. On the first appearance of these nodes 13 patients looked fit and signs of endocarditis were quiescent. It seems to be admitted that in the past an inevitable association of the nodule with severe carditis has been over-emphasized.

Tonsillitis and the Effect of Tonsillectomy.

In many histories no mention was made of the state of the tonsils, but enlargement was described in 134 children, that is, in slightly less than one-third. Sore throat was complained of by 102 children, usually one to two weeks before the actual onset of joint swelling. Of these, 46 had enlarged tonsils; in 10 the tonsils had already been removed, while in 26 no statement was made as to the tonsillar condition, and it is probable that the appearance of the throat in these children was thought to be normal. Young children do not always complain of sore throat, and this number (102) should probably be enlarged by the inclusion of a certain proportion of children complaining of earache, cough, cold *et cetera*. Fifty-seven children on admission to hospital were noted as being without their tonsils, 39 were in their first attack of rheumatism, and 18 were suffering a relapse. There has been some question as to the value of tonsillectomy. Kaiser's significant figures, showing a much lessened incidence of heart disease in 20,000 children whose tonsils had been removed, as compared with 28,000 children from whom they had not been removed, are well known. Miller considers that this is one of the chief reasons for the sharp difference in incidence of acute rheumatism between the two main social classes of the com-

munity. The necessity for proper attention to potentially dangerous collections of lymphoid tissue in this area should be restated whenever the question is discussed. The size of the tonsils is, of course, no indication of their dangerous potentialities towards the rheumatic heart.

Incidence of Heart Damage.

Of the total of 428 children, 308 were admitted to hospital during their first attack of acute rheumatism and 120 during their second or subsequent attack. Of these 120 children, 21 escaped without any recognizable cardiac damage after a period of observation averaging six to eight weeks in hospital. Some of these developed a temporary dilatation, often accompanied by a systolic murmur, usually poorly conducted, both of which signs completely disappeared before discharge from hospital. Seventeen other children entered hospital with a systolic murmur already present, which disappeared before their return to their homes. Suspicions of carditis were aroused when, apart from pyrexia: (a) a loud and well-conducted systolic murmur was heard, together with enlargement of the heart, accompanied or not by a palpable fremitus; (b) undoubted enlargement was accompanied by roughening or impurity of the first sound or by sounds of a tic-tac rhythm with tachycardia; (c) even in the absence of enlargement, a loud diastolic apical (sharp presystolic) murmur could be heard. A presystolic or mid-diastolic murmur sometimes developed within two months of the patient's admission to hospital. Pulmonary systolic bruits were frequent.

Of the 120 children in their second or subsequent attack of rheumatism, 18 appeared to have escaped previous heart injury, 42 had definitely been damaged by the first attack, and in five of these both mitral and aortic valves were involved. In all but seven of this group some alteration in the physical signs of the endocarditis occurred in hospital. Forty-two more entered hospital with suspicious evidence of carditis. In 10 this disappeared before discharge, six to eight weeks later, while 32 children became probably affected while under observation.

Of 308 children in the first attack (that is, of sufficient severity to warrant their admission to hospital), 102 appeared to escape any recognizable cardiac involvement, though a few of these had transient systolic murmurs, which disappeared before their discharge; 48 on admission to hospital had signs suggestive of long-established valve damage; 24 of these had cardiac enlargement and 24 did not. In six the heart was enlarged, but no bruit was present. One hundred and twenty-five others had signs suggestive of carditis of more recent onset, usually a systolic apical murmur, pyrexia and tachycardia. In 48 of these children such signs disappeared within an average period of two months. The total cardiac involvement found in first attacks was approximately 46%, in second attacks 64%. These results are tabulated in detail in Table I. The total cardiac involvement

TABLE I.
Incidence of Cardiac Involvement in 428 Children.

Group.	First Attack. 306 Children.	Second or Subsequent Attack. 120 Children.
I. Number entering hospital without any sign of carditis	117	18
(a) Number leaving hospital with heart still apparently clear	102	15
(b) Number leaving hospital under suspicion of cardiac damage	15	3
II. Number entering hospital with suspicious signs of endocarditis	125	42
(1) (a) Systolic apical murmur and enlargement	22	9
(b) Enlargement only	9	3
(c) Murmur only	94	30
(2) Number leaving hospital with such signs persisting	77	32
Number leaving hospital with all signs having disappeared	48	10
III. Number entering hospital with long-established endocarditis (no history of rheumatic fever or chorea): mitral, 45; mitral and aortic, 3	48	42 (M., 37; M. and A., 5)
(a) With enlargement	24	30
(b) Without enlargement	24	12
Number leaving hospital with some alterations in physical signs having occurred	46	35
Number leaving hospital with no alteration in physical signs having occurred	2	7
SUMMARY:		
I. No cardiac involvement	150 (49%)	25 (21%)
II. Recent cardiac involvement	92 (30%)	35 (29%)
III. Former cardiac involvement	48 (16%)	42 (35%)

in the whole series is therefore 253 out of 428 children, or 59%. A review of these children six months later would certainly have altered these results to some degree, but probably not significantly. An attempt was made this year to get into touch with them all, but so often had the parents changed their address that the replies were too few to warrant our pursuing the follow-up any further. Nine young people presented themselves for examination, however, and the findings are summarized in Table II.

The following features seem worthy of mention:

(a) Only 16% of patients had rheumatic valve damage without having had a frank attack of rheumatic fever or chorea.

(b) The features of endocarditis made their appearance with great rapidity—in nearly 50% of cases a suspicion of heart damage was justifiable on the day of the patient's admission to hospital. It may be contended that a systolic murmur alone is insufficient evidence of cardiac involvement, but the fact that only 18 of 120 children admitted to hospital during their second attack failed to present any sign of valve lesion, strongly suggests that this sign should be given such a meaning.

(c) In practically all children with signs suggesting previous valve damage the signs changed in character while the children were under observation.

The Ministry of Health report states that endocarditis ultimately develops in 43% to 47% of cases (average of male and female patients). Our figure here is 46%. Campbell and Warner heard a systolic murmur in half their patients during the height of the illness. Bertram found that in Glasgow rheumatic infection produced carditis in 76% of patients.

Mortality.

Of the total number of patients admitted to hospital (428), 8% died in hospital. Poynton gives the case mortality in London as 13%. These 32 children were studied separately. The frequency of certain symptoms at the onset of the fatal attack was as follows: rash, 2; epistaxis, 1; vomiting, 6; abdominal pain, 6; and chorea, 3. The average age of the children who died was six years. Considerable pallor was evident in nearly all. Half of those who died in hospital gave no history of ever having suffered from previous rheumatism. Thus 14 died in their first attack, 11 in their second, and 7 in their third or subsequent attack. The average temperature on the patients' admission to hospital was higher than in the non-fatal cases. Liver enlargement was detected on admission in practically all cases, oedema in only four. In some instances improvement in the general condition and fall in temperature were noted soon after admission, but a fatal relapse terminated the illness. In five, heart sounds were heard unassociated with any organic bruit. The case histories suggest the causes of death as shown in Table III.

TABLE III.

Causes of Death.	Number of Cases.
Acute dilatation at height of attack	8
Congestive failure following immediately after acute attack	10
Pericarditis with effusion	4
Pneumonia (? collapse)	5
Embolism (subacute bacterial endocarditis)	2
Acute pulmonary oedema	1
Reported subsequently by parents as having died	2
Total	32

TABLE II.
The Follow-up of Nine Patients Discharged from the Royal Alexandra Hospital for Children After an Attack of Acute Rheumatism.

Condition in Hospital.				Condition Now.						Home and Economic Conditions at Time of First Infection.		
Time of Observed Attack.	Time in Hospital.	No. of Attacks Before or After.	Family History.	Cardiac Signs in Hospital.	Tonsils.	No. of Years Later.	General Health.	Tonsils.	Cardiac Signs Now.		Electro-cardiogram.	X Ray Findings.
11	Days. 21	B. A. —	Clear.	Nil.	Unhealthy, not removed. Removed three years before.	3	Excellent.	Still unhealthy.	Nil.	Normal.	Normal.	Satisfactory.
9	30	—	Mother: Rheumatic arthritis.	Distinct systolic murmur.	Infected.	6	Good.	Some regrowth.	Apical systolic thrill and murmur. No dilatation.	Normal.	Early mitral-dilatation.	Satisfactory.
9	60	—	Clear.	Reduplicated first mitral and faint systolic murmur.	Infected.	9	Fair.	Still plus with glands.	Presystolic thrill and murmur. No dilatation.	Normal.	Normal.	Satisfactory.
9	Months. 3	1	Mother: Rheumatism.	Heart sounds of poor tone. Nil else.	Infected.	8	Poor.	Fauces clear.	Nil.	Normal.	Normal.	Satisfactory.
8	2	1	Clear.	Systolic in all areas.	Not noted.	8	Fair.	Appeared healthy.	Systolic apical thrill and murmur. No dilatation.	Normal.	Normal.	House damp. Circumstances good.
11	11	2	—	Systolic apical murmur.	Attack followed operation for tonsils and adenoids.	8	Good.	Absent.	Presystolic thrill and murmur. No dilatation.	Normal.	Normal.	No information.
11	Weeks. 6	—	Clear.	Reduplicated first mitral. Cleared up.	Out three weeks before.	6	Good.	Absent.	Nil.	Normal.	Normal.	No information.
11	Months. 2	3 Chorea.	—	Presystolic murmur.	Out.	16	Fair.	Absent.	Presystolic thrill and murmur. Heart dilatation.	Normal.	Marked dilatation on right side of heart.	No information.
10	1	1	Clear.	Systolic murmur.	Out.	16	Poor.	Absent.	Presystolic thrill and murmur. No dilatation.	Right-sided preponderance.	Normal.	Circumstances fair.

* Several slight attacks

The clinical incidence of pericarditis was thus 12%; but Carey Coombs states that pericarditis is present in 100% of children who die of carditis in the first decade. All these children had a regular pulse. No instance of auricular fibrillation was encountered, a point recently stressed by W. T. Ritchie. Death was often rather sudden and unsuspected, probably because such children usually die before dropsy and ascites are well established.

Chorea.

Of 24 children with chorea, three died in hospital. In 19 a cardiac murmur was noted on admission, but not in the five others. Of these 19, only five still had a murmur when they were discharged from hospital; that is, 16 children apparently escaped cardiac injury in spite of having experienced both forms of rheumatic infection.

Summary.

From a review of 428 hospital admissions, the clinical features of the rheumatic infection in Sydney are seen to differ little from those observed elsewhere. Premonitory symptoms, such as growing pains and wasting, may be rarer. There is less family contact with the disease, corresponding to the general lower incidence which obtains here. Children are affected at much the same age as in other centres, but no seasonal incidence can be detected. Vomiting and epistaxis seem to be associated with the severer types of infection. Pyrexia is usually slight. Pericarditis is rare, and pyelitis occurs just as often. Rashes were observed in 14% of affected children. The rarity of nodules, already referred to by other writers, is confirmed. Tonsillitis appears to be a common association, and a rheumatic attack usually follows a sore throat after the appropriate incubation period. Approximately one-half of children in their first attack escaped immediate cardiac damage, 30% had cardiac lesions, and 16% had signs of previous cardiac damage of insidious onset. Only 21% of children withstood two or more attacks without cardiac injury, 29% had signs suggesting recent involvement, and 35% had signs of old myocardial or valvular damage. No instances of valvulitis affecting the aortic valve alone were encountered, and in only eight children was the orifice involved together with the mitral valve.

Acknowledgements.

In the compilation of this type of paper one must necessarily invoke the help of many people, too many for detailed enumeration. However, I wish to tender my sincere gratitude to them all, and particularly to Dr. Machin, Principal Medical Officer of the Department of Education, and to his staff, to Mr. M. Watts, Miss Scott, Miss Cunningham and Miss Back. I am further indebted to Professor Macdonald Holmes for the loan of certain of the blocks so specified, and to the Board of the Royal Alexandra Hospital for Children for permission to peruse their records, as part of a mutual follow-up scheme for rheumatic heart disease in operation between the Royal Alexandra Hospital for Children and the Royal Prince Alfred Hospital.

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A SEARCH FOR TRICHINELLA SPIRALIS IN
CADAVERS IN AUSTRALIA.

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JOHNSTON and CLELAND⁽¹⁾ have summarized the recorded cases of *Trichinella spiralis* from this continent up to 1912, and state that:

The disease trichiniasis may be said not to exist in man or animals at the present time in Australia. With one exception (in some pigs from Richmond, New South Wales, many years ago) the few cases that have occurred have owed their origin to localities outside Australia.

Since the publication of the above paper two similar cases have been reported.⁽²⁾⁽³⁾ Both were discovered at autopsy by the presence of calcified cysts in the muscle tissues, and in both instances the persons were foreign-born.

Attention has been redirected to trichiniasis in man by the high percentage of cases found on microscopic examination of cadavers by American workers in recent years. Queen⁽⁴⁾ secured diaphragms from 344 necropsies in Rochester, New York, and artificially digested 50-gramme portions of muscle; in 17.5% the results were positive. McNaught and Anderson,⁽⁵⁾ using the same method in San Francisco, obtained 48 positive results in the course of 200 examinations. Riley and Scheifley⁽⁶⁾ examined microscopically 117 cadavers

in the Minneapolis dissecting room by pressing thin slices of muscle between glass slides, a method similar to that formerly used for the detection of trichinous pork. In this series the findings were positive in 17.9% of cases. As none of the persons whose cadavers were examined gave a history of the disease, these figures for samples of the population are extraordinarily high; much higher than those for pigs in the United States of America, among which about 2.5% gave positive results.

In view of these findings it was suggested by the Director-General of Health (Canberra) that an examination on similar lines in Australia might yield interesting results.

Material and Methods.

During the past two years pieces of diaphragm have been regularly collected from cadavers in the dissecting rooms of the Universities of Adelaide, Melbourne and Sydney. These bodies had been injected with preserving fluids, so that the digestion method of Queen could not be used. Approximately 0.75 gramme of muscle from each body was soaked overnight in chloro-phenol (chloral hydrate 2 parts, phenol 1 part by weight), teased apart and then compressed between two glass slides for microscopic examination.

Results.

Three positive results were obtained in a total of 119 cases examined.

TABLE I.

University.	Number Examined.	Number Positive.
Adelaide	14	Nil
Melbourne	11	Nil
Sydney	94	3
Totals	119	3

In each of the three positive cases the cysts were calcified and death of the larvæ had evidently preceded that of the host. In spite of this, the characteristic coiled appearance of the larva and the lemon-shaped cyst left no doubt of the diagnosis.

The following details of these cases were obtained from the records of the local charitable institutions where death had occurred, supplemented when possible by information from relatives.

CASE I.—E.K., a Dutchman, eighty-five years of age, had, according to his death certificate, died of senile myocarditis. He was born in New York and arrived in New South Wales at the age of thirteen years, since when he had not left Australia.

CASE II.—T.T., an Englishman, eighty-two years of age, was said, on his death certificate, to have died of carcinoma. He was born in Liverpool, England, arrived in Australia forty years ago, as a seaman, and had not left Australia since.

CASE III.—G.K., an Englishman, seventy-nine years of age, according to the death certificate, died of chronic myocarditis and senility. He was born at Liverpool, England, and arrived in Australia fifty-eight years ago. Nothing was known of his subsequent movements.

Discussion.

The results obtained from this inquiry add some support to the opinion of Johnston and Cleland⁽¹⁾ that local infections with *Trichinella spiralis* do not occur in Australia. Microscopic examinations of rats and pigs by the above authors, and of a large number of pigs from all parts of this State by Mr. Drabble, Veterinary Officer in Charge of Meat Inspection at the New South Wales State Abattoir (verbal communication), have failed to show a single case in animals.

In New Zealand one human case, apparently of local origin, has been reported.⁽⁷⁾ The source of the bacon which was blamed for this infestation could not be found, no other cases occurred, and a subsequent examination of 20,000 pig carcasses did not yield a single positive result.

The supposed cases in pigs at Richmond, already quoted, are evidently due to an error in diagnosis. The *Australian Medical Journal*, Volume XVI, July, 1871, at page 224, prints this terse report:

Some pigs in Richmond, New South Wales, were recently found largely affected with *T. spiralis*.

No other references appear in the local medical publications of that year, but a search of the files of *The Sydney Morning Herald* seems to have solved the mystery. On June 26, 1871, a leading article records the finding of worms one and a half inches long in the kidney and perirenal fat of a pig killed at Richmond, and continues:

According to indications presented, this worm belongs to the order of Nematodea and the genera [sic] Strongylidae . . . It is not unreasonable to infer that this worm may turn out to be the mature *Trichina Spiralis* so long unsuccessfully sought for by Zenker, Leuchart and Kuchenmeister . . . It may be that the muscle of the animal whose kidney is thus affected contains cysts, but no opportunity has been afforded for this observation. It is desirable that the inspectors should be aware that such an enemy to the peace of the community is in the neighbourhood.

Gerald Krefft, in a letter published on July 3, 1871, refutes this suggestion, pointing out that the life history of *Trichinella spiralis* had already been experimentally demonstrated by Virchow in 1864. Similar worms from similar situations had been examined at the museum by Krefft, and he goes on to say:

This worm may be a local variety of *Strongylus suis* . . . so much is certain, however, that the worm is a *Strongylus* and has nothing whatever to do with the dangerous *Trichinae* . . . no case of the dangerous sickness (*Trichiniasis*) has yet come under the notice of our medical men in this part of the world.

From the details given, there is little doubt that the worms in question were *Stephanurus dentatus*, commonly found in the perirenal fat and kidneys of pigs in this State.

The method of examination followed in this investigation would certainly fail to reveal extremely light infestations. The numbers of cysts discovered in the first counts of these three cases were 13, 26 and 6 respectively; a more careful

examination of the first case revealed 10 additional cysts. Queen⁽⁴⁾ selected 29 cases from those in which he obtained positive results by artificial digestion, and reexamined them by pressing thin slices of muscle between slides; in only 11 were cysts found. The amount of tissue used was approximately equal to that used by myself. McNaught and Anderson⁽⁵⁾ counted the larvae recovered from each fifty-gramme lot of muscle and found less than 20 larvae in 38 cases, less than 100 larvae in 44 cases, out of a total of 48 cases giving positive results.

Cysts from the case of E.K., who had not left Australia for seventy-two years, were still easily recognizable. Most of them still contained the coiled larva, shrunken and calcified; in others no larval form was distinguishable, but the cyst walls retained their characteristic shape and relation to the surrounding muscle fibres.

Summary.

1. Microscopic examinations of 119 cadavers in Australia for *Trichinella spiralis* resulted in three positive results being obtained.
2. In each case the progress of calcification and the microscopic appearance of the larvae indicated that the infections were not recent. They were probably acquired outside Australia.
3. No case of *Trichinella spiralis* in man or animal has yet been shown to have originated in Australia.

Acknowledgements.

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A BRIEF REPORT ON FIFTY CASES OF CLINICAL DIPHThERIA AND THE CULTURAL TYPE OF THE CAUSAL ORGANISMS.

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In a previous report⁽¹⁾ the occurrence in Victoria of the *gravis* type of *Corynebacterium diphtheriae* was described, that of the "intermediate" and *mitis* types were noted, and evidence was produced to support the suggestion that *gravis* strains were associated with more severe cases of the disease in Victoria, as is the case in other parts of the world. Subsequently, observations by Anderson, Goldsworthy and Ward⁽²⁾ on the cultural types of *Corynebacterium diphtheriae* responsible for 184 cases of diphtheria in Sydney, New South Wales, showed that cases of malignant and submalignant diphtheria were much more frequent in the *gravis* type of infection, and accounted for a high case mortality. In the particular series of cases investigated by these workers no "intermediate" strains, but only *gravis* and *mitis* types, were encountered. Because it was known that the general distribution of types in Victoria was different from that found in the above series in New South Wales, and for purposes of comparison, it was decided to carry out the present investigation. Dr. McLorinan, of the Queen's Memorial Infectious Diseases Hospital, consented to forward swabs of fifty cases of clinical diphtheria selected at random from patients admitted there, and to supply clinical observations and reports concerning them. For his help and comments I wish to thank him.

Bacteriological Typing and Clinical Observations.

After isolation on MacLeod's tellurite medium, each strain of *Corynebacterium diphtheriae* from the swabs was replated and a stock culture was made from a single colony. The stock cultures were then tested for their ability to ferment glucose, galactose, saccharose and starch, and the type of growth and change of reaction produced in phenol-red broth was also observed. The information so obtained, together with the colony appearance on tellurite medium, led to the classification shown in Table I.

TABLE I.
Clinical Type.

Type of <i>Corynebacterium diphtheriae</i> .	Severe and Rather Severe.	Moderate and Mild.	Total Cases.
<i>Mitis</i>	2	10	12
"Intermediate"	9	16	25
<i>Gravis</i>	6	6	12
Atypical <i>gravis</i> ¹	—	1	1
Total	17	33	50

¹ This was a virulent strain like *gravis* on tellurite and in other cultural reactions, except that it did not ferment starch. It was isolated from a patient with chronic nasal diphtheria.

Of the fifty patients classified as above, eleven developed toxic complications, the correlation with the cultural type being shown in Table II.

TABLE II.

Type.	Number of Cases in which Toxic Complications Occurred.	Deaths.
<i>Mitis</i>	1	Nil
"Intermediate"	7	1
<i>Gravis</i>	3	1
Total	11	2

The one patient infected with the *mitis* type in this group with toxic complications was a child who had been ill for nine days before admission to the hospital, and who was showing extensive old faucial membrane at that time. The one death due to infection with the "intermediate" type was that of a patient who was ill for eight days before admission to hospital. The patient who died from infection with the *gravis* type was admitted to the hospital soon after the first symptoms were apparent, but died quickly, having failed to respond to vigorous antitoxin treatment.

The remaining thirty-nine patients did not show toxic complications and recovered, but it is of interest to note among these the case of a child infected with a *gravis* strain, who had been in contact with another child, noted in Table II as having died as the result of *gravis* infection. The first child showed symptoms of only moderate severity and recovered, though another member of the family (not included in this series), presumably infected with the same strain, suffered from severe toxic diphtheria.

Discussion.

Although this series is a very small one, it is considered that it gives a fairly accurate picture of the types of *Corynebacterium diphtheriae* to be found in cases of clinical diphtheria in Melbourne and of their significance. The results obtained are confirmed by a considerable amount of work on cultures obtained during the routine examination at this laboratory of swabs from cases in which it is difficult to trace all of the clinical history. The "intermediate" type of *Corynebacterium diphtheriae* appears to be the one most commonly present in clinical cases of the disease and it often gives rise to severe toxic complications and sometimes to death. The *mitis* type gives rise to a mild form of the disease and is of less clinical significance. The *gravis* type, like the "intermediate", gives rise to severe toxæmia, but is more commonly associated with the malignant type of disease, and the cases appear to be less responsive to treatment with antitoxin. This latter observation agrees with those of Anderson, Goldsworthy and Ward and emphasizes the importance of a knowledge of prevailing strains

from the epidemiological point of view. An epidemic due to the same strain of *gravis* as that described by the Sydney workers would show a high case mortality rate, particularly amongst children of pre-school age, or in a community in which diphtheria had not been present for some time. The only practical method of avoiding such an eventuality in susceptible groups is the widespread use of prophylactic immunization.

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MEDICINE AND THE SOCIAL ORDER.

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Few will deny that the medical profession is vitally concerned with the health of the nation; nearly all will agree that everything which affects health is our business, and that we are entitled to express an opinion upon it.

Health is the well-being (is it too much to say the perfect-being?) of the whole man, physical, mental and moral. There is no more room for dualism in medicine than in religion or philosophy; each must deal with man as one entity, indivisible, or the end will be false. Unless a man is at one with himself, there will be moral conflict resulting in psychological disease, and the physical well-being will suffer in turn.

A man's health demands that he have enough food, air, light, exercise, rest, useful work, hope for the future, something upon which he can expend all his energies to the full. He must have personal dignity, the assurance of a useful place in society, a feeling of economic security. He needs a congenial mate, and the knowledge that his children can enjoy freedom and safety. And "there must be joy". Until all these things are possible for every citizen, the health of the nation cannot be as near perfection as it should be.

Obviously, then, health is bound up with the political and economic structure of society, so that the medical profession as a whole is inevitably interested in politics and economics, and should speak with authority upon all political and sociological questions which have any bearing upon health.

The present social conditions are such that ill-health is inevitable for a large proportion of the people, and for their children. Recent official figures show that in England four and a half million people have an average of four shillings a week to spend on food. Sir John Boyd Orr, head of the Rowett Research Institute, Aberdeen, recently made

a survey of the adequacy of diet in relation to income:

It was found that the consumption of bread and potatoes was practically uniform throughout the different income level groups. Consumption of milk, eggs, fruit, vegetables, meat and fish rose with income. Thus, in the poorest group, the average consumption of milk, including tinned milk, was equivalent to 1.8 pints a week for each person; in the wealthiest group it was 5.5 pints. The poorest spend 2.4d. on fruit a week, and the wealthiest 1s. 8d. . . . The average diet of the poorest group, comprising 4,500,000 people, is, by the standard adopted, deficient in every constituent examined. The second group, comprising 9,000,000, is adequate in protein, fat, and carbohydrates, but deficient in all the vitamins and minerals considered. The third group, comprising another 9,000,000, is deficient in several of the important vitamins and minerals. Complete adequacy is almost reached in group four, and in the still wealthier groups the diet has a surplus of all constituents considered.

Twenty-two and a half million people, more than half the population of England, are not adequately nourished, chiefly because they have not sufficient money. Another part of the report shows the effect of this malnutrition on physique:

At thirteen years of age, the boys at Christ's Hospital School are on an average 2.4 inches taller than those of the council schools. At seventeen years they are 3.8 inches taller than "employed males" who may be taken as belonging to the same class as the boys in the council schools.

Its effect on the body's resistance to disease is illustrated by the death rate from tuberculosis; among occupied males it was nearly three times as high for unskilled labourers as for men in business and professional life.

Another recent investigation⁽¹⁾ shows:

. . . that both in pregnant and in non-pregnant women the average hæmoglobin level is lower and the incidence of anæmia is higher in the groups with incomes of less than 15s. weekly per "man-value". Since there is a difference in the incidence of anæmia between the groups of women whose income is below and above 15s. a week—the latter group averaging £1 a week with very few individuals reaching an income of 30s.—it is not unreasonable to assume that the difference would be more marked if data regarding women of higher income groups were available. This supports our view that in the middle and upper classes where the diet is not restricted by economic circumstances, the incidence of anæmia is probably much less. Further evidence in favour of this deduction is provided by the investigations of Price-Jones, Williamson, and others, which have shown high hæmoglobin levels in women of the middle classes.

In our own country such thorough investigations do not appear to have been made, but we know well enough that conditions are not much better. There are over 200,000 unemployed, with their dependants and children; this means, I suppose, 500,000 people without enough food, badly housed, poorly clothed, and with nothing on which to use their mental and physical energy; they may not even produce children without despair. When they think they must feel themselves "without God and without hope in the world". If they marry, even kindly and intelligent people look on them as being guilty of a sort of crime—"they married on the dole!" They are young, vigorous, and willing to work, but the State, society, does not give them work; does it expect them to remain celibate, too?

In this district there are young men of twenty-three who have never had a regular job. Even if the dole gave them enough to buy adequate food, clothing and shelter (how far short of that is 7s. 6d. a week?), could they be healthy with no use for their energies, and no hope for the future? There is a family here, a mother, widowed, with pulmonary tuberculosis in a not very active form, a boy of fourteen, intelligent but rather delicate, and a girl of ten. After paying the rent of the cheapest suitable cottage there remain 22s. a week to feed and clothe the three of them. The mother is an intelligent woman, eager to do the best for her children; what chance has she of making them first-class citizens? Yet the State says that no more can be done to help her.

Medical opinion, however, so far expressed very sporadically, is beginning to demand that society shall do more, not as charity, but in its own interest. What will society do with the ever-increasing mass of people who will be physically unfit for work when work is once more waiting for them? What is society going to do when it is confronted with a vast army of men who have been, from youth, without food, without work, without hope; defeated, and hating the society which has defeated them?

Sir H. Brockenbury⁽²⁾ is emphatic about its duties to the mother:

... The real requisite for general racial improvement, or for the scientific study of inherited human differences, is the improvement of environment, and the removal of inequalities of environment. . . . If society ought to encourage maternity, it is equally society's duty to help to make maternity as safe as possible for the mother. It may be that it is also the duty of society to relieve maternity of some of its economic burdens. . . . During the past year or two the importance of nutrition in general and dietary in particular in this, as in other spheres of health, has been realized, and definite information has become available. The effects of inadequate diet upon the mother and on her offspring are manifold. It seems likely that a proper proportion of vitamin A in the diet of pregnant women will reduce the liability to puerperal infections, and it is certain that an adequate intake of other vitamins and certain minerals (calcium and phosphorus) may influence fertility, prevent the toxæmias of pregnancy, and promote the viability of the child, both in the womb and during the period of lactation. The diet actually required is simple, but relatively expensive for those of very limited means; but neither its importance for maternity, nor its effect on maternal mortality is now open to question. . . . In an important recent pronouncement by the British Medical Association the medical requirements of a woman during maternity are thus set out: "(1) Medical supervision throughout by the doctor of her choice, with specialist and hospital aids where needed. (2) Efficient nursing and advice by a skilled midwife or maternity nurse of her choice. (3) Provision of help in her house during the period of her actual incapacity. (4) Supply of dressings, special apparatus, or means of transport when required." "There are", it is added, "large numbers of women who can provide one or more of all these requirements for themselves, but the Association is strongly of opinion that the State should see to it that, by some means or other, whether by an extension of the scheme of national health insurance or by the action of local health authorities, they should be available to every mother."

Dr. Sand⁽³⁾ was recently quoted in THE MEDICAL JOURNAL OF AUSTRALIA, and is even more emphatic:

Since a human being declines or becomes perverted if over-work, poverty, or neglect drag him below the level

of an existence compatible with the maintenance of his physical and moral health, the first rule is to ensure that no one at no time shall be wanting in this necessary minimum. Sociological medicine demands the provision by collective measures of favourable labour conditions, good housing, decent wages, generalized insurance, sanitary, technical and educational services, to be completed by the individualized action of medical and social case-work.

McCarrison⁽⁴⁾ states at the conclusion of his lecture:

The main burden of ensuring that each member of the community should receive a diet which satisfied his physiological needs, must rest on the Government.

A century ago such conditions were excusable because they were inevitable. Malthus's "law of diminishing returns" still held good; production could not keep pace with increasing population. But during the last century the industrial revolution, guided by capitalism, has given us such command over nature that it is now physically possible to produce enough food, clothing, shelter, leisure, and modest luxury for every civilized human being. There is no possible doubt of that. We can produce everything that we need to enable all of us to lead full, useful, and happy lives; but we cannot distribute it. Our economists and experts tell us that we produce too much, so we must destroy. Destroy milch cows in Denmark, destroy wheat in France, destroy cotton and hogs in America. Why? To help us feed the hungry? We must "raise price-levels". Why? So that those with four shillings a week to spend on food may buy more?

Here we have had, for seven years, hundreds of thousands of workmen unemployed, drawing the dole, while there are roads to be made, railways to be laid, bridges to be built, aerodromes to be laid down, rivers to be locked and dammed. There is work enough to absorb the energy of every man and woman in the country for decades, but our politicians are "blind leaders of the blind", and we are all in the ditch. They have come to regard money as a commodity to be bought and sold, instead of simply as a means of exchanging goods and services. They see the wealth of a country in bank-notes instead of in coal and iron and timber; wheat and cattle and wool; soil, rain, rivers and sun; health, energy and creative ability of the people. These are our real riches, plentiful enough to give everyone a full life, but our "leaders" do not see the vision, and "where there is no vision the people perish".

Anyone who has watched the pronouncements of the orthodox economists will not be surprised at their lunatic helplessness in the face of problems which capitalism must solve quickly if it is not to fall.

In 1908 Norman Angell⁽⁵⁾ demonstrated to the satisfaction of any ordinary man that a modern war would ruin equally the victor and the vanquished, and that it would be impossible to exact an adequate indemnity from the vanquished because (a) the vanquished could not pay, and (b) even if he could the payment would ruin the victor. But

the orthodox economists giped at him. In 1919 when the Allies were fixing the German indemnity Maynard Keynes was the only economist of note who said that it would be impossible to collect it. Immediately before the depression they were blind to what was coming.

Hoover⁶⁰ declared in 1928 that "the outlook for the world today is for the greatest era of commercial expansion in history", and again that "unemployment in the sense of distress is finally disappearing; we in America today are nearer to the final triumph over poverty than ever before in the history of any land". The American Professor N. Carver of Harvard University published a book in 1928 entitled "This Economic World", in which he raised the question: "How long will this diffusion of prosperity last?", and answered: "There is absolutely no reason why the widely diffused prosperity which we are now witnessing should not permanently increase." This view was shared by the leaders of industry. The president of the Bethlehem Steel Corporation declared in 1928: "I say with confidence that there has been established a foundation upon which there may be built a structure of prosperity far exceeding anything we have yet enjoyed." (*The Iron Age*, November 1, 1928.) The president of General Motors declared: "My standpoint regarding 1929 is based on the conviction that our general economic and industrial situation is thoroughly sound." (*New York Times*, October 29, 1928.) . . . "The Encyclopædia Britannica", 1929,⁶¹ says: "Capitalism is still accused of responsibility for avoidable unemployment, arising from periodic alternations of climaxes and depressions in trade activity, of 'booms' and 'slumps'. It is certain, however, that though there must always be some tidal movement of rise and fall, the former violence of these rhythms is now much abated in times of peace owing to longer experience and fuller knowledge; to swifter information in every part of the globe of what is happening in every other; to quicker transport, to better-calculated control exercised by the great trusts and syndicates as indirectly by the greater banking combinations; and to the better adjustment altogether of world forces of supply and demand."⁶²

During the world depression which promptly followed these cheerful prophecies, there was a babel of voices clamouring different advice:

The confusion of ruling opinion, following the economic crisis, was illustrated in the contradictory plethora of "solutions" offered on all sides for the existing dilemmas. "The only lasting step", announced the Basle Experts Committee's report in December, 1931, to solve "the increasing financial paralysis of the world", is "the adjustment of all reparations and war debts". But a year after the cancellation of these by the Hoover moratorium, the *Economist* had to register, on May 14, 1932, that "a year ago it was possible to believe—as Mr. Hoover and many bankers and statesmen believed—that the lifting of the burden of reparations and war debts would be such a relief to the world that it would turn the tide of depression. That belief is no longer possible; it is abundantly clear that action on a much wider scale is necessary." The "only way out", affirms the *Midland Bank Review* in January, 1932, is "the way of a rising price-level". "The only alternative solution", declared Keynes in a lecture on "The World Economic Crisis and the Way of Escape", in February, 1932, to "the disappearance of the existing credit system", is "a world-wide organized inflation". "The way of escape from economic crisis", announced Sir William Beveridge, in a Halley Stewart lecture on the same subject in the same month, "was by way of international action to suppress the anarchy of purchasing power and to keep the liberty of production and exchange."⁶³

With these illustrations of the futility of economists and experts before us we should not fear if we are told that needed reforms are impossible.

If we are concerned with economics we are equally concerned with war, an even more dreadful destroyer of every aspect of human health and happiness. We all know the insane speed with which the nations are getting ready for the next war, but figures can help our imagination to grasp the extent of the insanity.

In Japan military and naval expenditure accounted for forty-six per cent. of the budget in 1935-1936, and in 1936-1937 for fifty-eight per cent. . . . Churchill estimated that the total German rearmament expenditure in the three years 1933-1935 was £1,500 million. In Britain during 1935 the shares of thirteen armament firms arose from a market value of £11.2 million to £27.9 million.⁶⁴

Many writers see in war the inevitable breakdown of the capitalist system.

The more obvious and glaring expression of this process, the burning of foodstuffs, the dismantling of machinery that is still in good condition, strike the imagination of all. But all do not yet see the full significance of these symptoms; first, the expression through these symptoms of the extreme stage of decay of the whole capitalist order; second, the inescapable connection of this process of decay with the social and political phenomena of decay which find their expression in Fascism; and third, the necessary completion and working out of this process in war. For war is only the most complete and most systematic working out of the process of destruction. Today, they are burning wheat and grain, the means of human life. Tomorrow they will be burning living human bodies.⁶⁵

Another madness in our present system is seen in the disastrous effects of labour-saving machinery; instead of meaning more food, more clothing, better housing and more leisure, it means more unemployment, more men and women in misery, more children growing up under-nourished and hopeless; instead of using machines to increase the fullness and joy of life, man is letting them slowly destroy him.

In three vitally important aspects of life the present social order has so far failed. It has failed to distribute the immense riches that can be produced. It has failed to assure peace when war is so clearly an appalling disaster. And it has failed in the sane use of machines. Unless it can repair its failures quickly it will collapse, to be followed by some other system more fitted to solve our problems. From earliest history social systems have developed, served mankind well in their day, and been superseded—patriarchal (perhaps matriarchal), tribal, imperial, feudal, industrial capitalist, and now capitalist imperial. In the course of evolution the present one must pass. Our profession should be able to do more than any other body to help it to an orderly development into a form better suited to the needs of the people, and to avoid the threatening descent into chaos.

I am convinced that it is time the medical profession became the leaders of the people in all matters that concern the public health. There is no other body of men so fitted to lead, for no other knows all that a people must have for complete health. Already a little has been done; in Queensland a seven-page nutrition supplement has been contributed to the *Courier-Mail* (June 15, 1936). Wherever there are social conditions that cause ill-

health in any form, the Association should speak with authority; it is its duty only to say what must be done to improve conditions—how it is to be done is for Parliament to decide; politicians have no cause to complain if difficult jobs are laid upon them; they are in Parliament because they convinced the electors that they could do the jobs better than anyone else.

A permanent committee could be set up by the British Medical Association whose special work it would be to investigate all matters that affected the public health. The men on this committee should: (i) suggest necessary reforms direct to the Government; (ii) send its views to the Press, stating what it had advised the Government; (iii) make the same announcement by wireless; (iv) establish a popular magazine that would educate the people in all matters of health, so that an informed public opinion would support the profession. This could be done entirely outside party politics; some members of the committee might be conservatives, some might be socialists; that would not matter, for all could agree that bad conditions of working, living, bearing and rearing children, should be abolished.

If this fight for the well-being of the people were begun and maintained with all the energy and ability of the profession, I am sure we would become the real leaders of the nation into a new promised land. This idea of leadership has already been stated.⁽¹¹⁾

Medicine has received from anatomy, physiology, psychology, and pathology, the more essential elements of the knowledge of ourselves. It could easily enlarge its field, embrace, in addition to body and consciousness, their relations with the material and mental world, take in sociology and economics, and become the very science of the human being. Its aim, then, would be not only to cure, or prevent diseases, but also to guide the development of all our organic, mental, and sociological activities. . . . Medicine aggrandized according to the conception of Descartes, and extended in such a manner as to embrace the other sciences of man, could supply modern society with engineers understanding the mechanisms of the body and the soul of the individual, and of his relations with the cosmic and social world.

This would seem to many an impossible task, much of it outside the scope of medicine; but at least we should all feel that it is the duty of the medical profession, acting as a whole through its associations, to give an authoritative lead in all matters affecting the health of the community. This should be done publicly, vigorously and continuously, and health should be given its fullest meaning, so that any condition of living which produces less than perfect health for any human being should be attacked. There is now no disputing the statement that it is possible to give perfect living conditions to every civilized human being—industry can now produce enough food, clothing, shelter, leisure and enjoyment for everybody. When we all really believe that, we must protest with confidence and passion against the continued existence of want and misery, leading inevitably to disease.

Such a continued and public protest from the medical profession must soon have profound economic results. The people would quickly realize

that it was made with the authority of knowledge, and solely for their good; a growing public demand for reform would compel the politicians to find the means, or make room for others.

To persuade our profession that such a crusade for perfect health is necessary and possible will no doubt be difficult, as most human beings are conservative. The group of men chosen to organize and ceaselessly carry on the propaganda will find themselves continually up against heart-breaking difficulties and prejudices, but

Men grow when inspired by a high purpose, when contemplating vast horizons. The sacrifice of oneself is not very difficult for one burning with the passion for a great adventure. And there is no more beautiful and dangerous adventure than the renovation of modern man.⁽¹²⁾

References.

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- ⁽³⁾ R. Sand: "Health and Human Progress: An Essay in Sociological Medicine".
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- ⁽⁵⁾ Norman Angell: "The Great Illusion".
- ⁽⁶⁾ R. Palme Dutt: "World Politics, 1918-36", pages 64-65.
- ⁽⁷⁾ "Encyclopædia Britannica", Fourteenth Edition, Volume IV, page 805, "Capitalism".
- ⁽⁸⁾ R. Palme Dutt: *Loco citato*, pages 82-83.
- ⁽⁹⁾ R. Palme Dutt: *Loco citato*, pages 112-113.
- ⁽¹⁰⁾ "Christianity and the Social Revolution" (Victor Gollancz, publisher), page 244.
- ⁽¹¹⁾ Alexis Carrel: "Man the Unknown", pages 209, 210.
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Reports of Cases.

ACUTE COCAINE POISONING TREATED SUCCESSFULLY BY INJECTION OF SODIUM EVIPAN.

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SIGNS of acute cocaine poisoning, both in mild and severe form, are not uncommonly seen following the application to a mucous membrane or the injection into the tissues of a solution of cocaine hydrochloride. These signs are pallor, faintness, weak and rapid pulse, followed, at times, by convulsions and collapse. The symptoms complained of are faintness, palpitation, fear of impending death, nausea, and in more severe cases shortness of breath, precordial pain and cramping pains in the muscles.

Occasionally patients show signs of stimulation and become excited from cocaine absorption, grow talkative, hilarious, restless and may be difficult to control. I have seen these last-mentioned signs occur in patients who have had a nasal packing of cocaine hydrochloride left in overlong.

There is an individual susceptibility to cocaine which is difficult to estimate, but skin testing should be a means of evaluating this risk and of avoiding the danger. It is considered (British Pharmacopœia) that 0.03 gramme (half a grain) is the maximum safe dose to be administered to any patient for one particular procedure.

Clinical History.

The following are the notes taken by me of a case which occurred in Sydney recently and which should prove of interest, as the treatment carried out proved successful.

The patient was a male, nearly seventy years of age, and twelve stone in weight, who had been given, in error, 0.18 gramme (three grains) of cocaine hydrochloride by hypodermic injection.

Steps had to be taken without delay to deal with this situation, and the sequence of events was as follows:

"Murrell's Poisons" (1925 edition) suggested "stimulants, injections of strychnine or ether, artificial respiration, oxygen".

At 1.50 p.m. the patient looked pale. His pulse was 120 per minute, of fair volume, and not irregular in character. He showed slight generalized twitchings, more especially of the muscles of the extremities. Oxygen and then "Carbogen" were tried, but with little noticeable effect. The surgeon suggested that 2.2 milligrammes (one-thirtieth of a grain) of strychnine should be given, but no improvement resulted. "The Extra Pharmacopœia" (Martindale and Westcott) directed treatment with "Sodium Amytal", which drug was said to be an anti-convulsant and detoxicant in cases of cocaine poisoning. No intravenous preparation of this drug was at hand, and I decided to try another barbiturate, "Evipan Sodium", which, to me, appeared to offer even better and more rapid effects.

At 2.10 p.m. thirty minutes had elapsed since the cocaine was injected, and signs of absorption were to be observed. Complaint of uncontrollable, spasmodic contractions of the extremities was made and, at the same time, the patient said his feet felt cold. He also said he feared that his heart might stop before his wife saw him again. He appeared flushed, his skin felt dry, but not cold to the touch. His pulse was 110, and although the volume was soft, the beat was regular. He was alert, though not excited or exhilarated. He showed irregular twitchings of the voluntary muscles and the diaphragm. The *erector spinae* muscles were occasionally involved, and a slight degree of opisthotonus was noticed. The pupils were dilated, but not markedly so. The mouth was dry, but no complaint of this was made by the patient.

At 2.20 p.m. oxygen was still being given and may have relieved the breathing a little between spasms. The pulse had now increased to 120 and the patient, in addition to complaining of the uncontrollable muscular movements, said he was getting severe pains in the "pit of the stomach" and the lower parts of the chest. These were no doubt due to irregular contractions of the diaphragm.

At 2.25 p.m. fortunately his veins stood out well and 3 cubic centimetres of "Evipan Sodium" were given intravenously in three minutes. The convulsions now ceased, and the patient remained quiet and unconscious, with eyeballs fixed off centre for six minutes. He woke ten minutes later and appeared somewhat dazed. Some minutes afterwards he was rational and said he felt better and had no pain. His convulsions had disappeared and his pulse dropped to 100. He lay comfortably and appeared better, being free from pain or spasms until 3.5 p.m.

At 3.5 p.m. he had difficulty in getting his breath and the pains in the epigastrium returned. That he was in a good deal of pain was apparent from his method of breathing, which was to take a short inspiration and hold it in as long as possible, apparently in an endeavour to fix the diaphragm and so get some relief. The spasms were not as frequent or as severe as in the attack prior to the first injection of "Evipan". A second dose of 3 cubic centimetres of "Evipan" was now given, which took immediate effect, as in the first instance. His pulse, which in the meantime had gone up to 110 again, dropped to 100, and he remained unconscious for about ten minutes. On recovering he sweated profusely for the first time and said he was well.

At 3.35 p.m. he said that drawing his breath was "heavy" and he looked frightened, but, except for an occasional spasm, seemed to be recovering. His pulse count was 112 and of fair volume. He was given a further 2 cubic centimetres of "Evipan" and recovered in a short time. The pulse went down again to 96.

At 4.45 p.m. he had so far recovered that he was taken back to bed and made warm and comfortable. He was kept under close observation until 5.30 p.m.

At 5.30 p.m. he was seemingly little the worse for his experience, his only complaint being that he felt afraid to go to sleep; he was given 0.01 gramme (one-sixth of a grain) of morphine sulphate. As this had little effect, it was repeated at 8 p.m., and he slept on and off during the night, and in the morning he was free from any effects of cocaine poisoning.

Comment.

Since the occurrence of the above-mentioned case I have consulted what literature was available in Sydney, and have found that A. L. Tatum, A. J. Atkinson and K. H. Collins,¹ of the University of Chicago, made an investigation into the toxicity of cocaine in 1925. Rabbits and dogs were used for their experiments and their conclusions are interesting.

They found that the minimum lethal dose of cocaine was for the rabbit 100 milligrammes per kilogram, and for the dog 26 milligrammes per kilogram. If artificial methods of respiration were carried out then the minimum lethal dose was raised to 350 milligrammes per kilogram in the rabbit, but these methods did not help to raise the limit of tolerance in the case of the dog.

They then found that if a mixture of barbitol and paraldehyde was given beforehand, the minimum lethal dose was raised from 25.5 to 100 milligrammes per kilogram in the dog. It was also discovered that in the case of an overdose, the convulsions which occurred could be controlled by the mixture of barbitol and paraldehyde, and that the likelihood of recovery from cocaine poisoning in the dog was roughly proportional to the time the convulsions were permitted to continue. Death from cocaine poisoning, they concluded, was due to the effects of direct medullary injury, together with the deleterious, indirect effects of the cocaine-poisoned brain on the medullary centres. Finally, they suggested the use of barbitol in cases of cocaine poisoning in man, and were awaiting the results of the clinical application of their suggestion.

Other investigators, P. K. Knoefel, R. P. Herwick and J. Lovenhart,² after a number of experiments with rabbits, confirmed the findings of Tatum and his co-workers, namely, that barbitol, in the form of "Sodium Amytal", was much more effective in preventing a fatal outcome than a number of other drugs used. They found atropine sulphate of no value. Potassium cyanide was equally ineffective, in that it failed to prevent the onset of respiratory paralysis. Magnesium sulphate, given intramuscularly, rendered the animal more susceptible to cocaine. Ether inhalation was of little value. They also found that "Sodium Amytal" was effective in cases of poisoning from "Novocain" and "Butyn".

It might be mentioned that an excellent article on "Procaïne" ("Novocain") toxicity has been published by Ralph M. Waters, of Madison, Wisconsin.³

The work carried out by these men has shown that various derivatives of barbituric acid are of distinct value, both as a means of prophylaxis and treatment. In the case I have reported it appears to have been a life-saving measure.

These drugs, therefore, prevent the onset of convulsions and seem to act as detoxicants when overdosage of cocaine, "Novocain" or "Butyn" has occurred. A small dose of "Sodium Amytal" or other barbiturate given before these drugs are used should be a means of preventing the development of unpleasant symptoms in persons susceptible to cocaine.

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¹ A. L. Tatum, A. J. Atkinson and K. H. Collins: "Acute Cocaine Poisoning: Its Prophylaxis and Treatment in Laboratory Animals", *Journal of Pharmacology and Experimental Therapeutics*, Volume XXV, 1925-1926, pages 325-335.

² P. K. Knoefel, R. P. Herwick and J. Lovenhart: "Prevention of Acute Intoxication from Certain Local Anesthetics", *Journal of Pharmacology and Experimental Therapeutics*, Volume XXXIII, 1928, page 265; "Prevention of Acute Intoxication from Local Anesthetics", *ibidem*, Volume XXXIX, 1930, pages 397-411.

³ Ralph M. Waters: "Procaïne Toxicity: Its Prophylaxis and Treatment", *The Journal of the American Dental Association*, Volume XX, December, 1933, pages 2211-2215.

Reviews.

STATISTICAL METHODS FOR RESEARCH WORKERS.

THE rapid appearance of a sixth edition of R. A. Fisher's "Statistical Methods for Research Workers"¹ is indicative of an increasing demand for a work that is concerned mainly with an exposition of the practical applications of statistical formulæ, rather than with mathematical theory; it can be recommended particularly to experimental biologists with limited mathematical equipment. Some fresh material has been added to the previous edition, which was reviewed in this journal.

ONYCHOLOGY.

Nor a great deal has been written, at least in English, about the nails and their diseases, so that the appearance of further literature on this subject is more than welcome. Dr. Pardo-Castello, of Cuba, has published a monograph² entitled "Diseases of the Nails", in which he attempts, as noted in his introduction, to supply to English-speaking physicians, in a condensed and comprehensive manner, the widely scattered facts contained in the literature, together with his own observations on the subject. That he has done this with some measure of success will be appreciated by dermatologists and others who have often searched text-books in vain for help in the elucidation of some obscure condition of the nails.

Several features in this production, however, are somewhat disappointing and call for comment. The discussion often becomes involved, and in many instances there are no subdivisions into aetiology, diagnosis, treatment *et cetera*, these aspects being dealt with in one paragraph. The author's main object appears to be to quote numerous cases reported by various writers rather than to give a summary of their views and his own opinion of them. In this connexion it must be admitted that there is an excellent bibliography in the appendix, and the book is really an exhaustive survey and summary of the literature on onychology. The value of this book will be realized only if the references quoted are obtainable and are used in conjunction with the text.

In spite of the fact that X rays are mentioned as one of the most useful agents at our disposal for treatment of diseases of the nails, the very short chapter (less than two pages) on this subject would seem to be wholly inadequate. A general statement is made about fractional doses of X rays, and certain conditions, such as onychomycoses, several dystrophies, psoriasis, eczema, *verruca vulgaris* and inflammatory paronychia, are said to respond well to X rays in many cases, but no details are available as to the technique and dosage to be used in these diseases. Subintensive and intensive doses are stated to be necessary sometimes, but no mention is made as to what these respective terms are meant to convey.

In the discussion on *kollonychia*, or spoon-nails, it is surprising to find but scant mention made of what the author calls anachlorhydric anemia (presumably the hypochromic type is meant) as a cause, and this only, as it were, an afterthought in the last paragraph. Evidently the more recent work on this subject has not become

known to the author, for, in addition to treatment with iron, he advises liver extract and omits to mention the fact that the administration of hydrochloric acid is very beneficial in some cases.

On the whole, the book is well produced on good paper, and there are ninety-four excellent illustrations, which will well repay study. To all who are interested in onychology the monograph will be found a useful and concise summary on this important subject.

HYGIENE.

A VOLUME not much larger than the ordinary six-shilling novel, the fifth edition of "A Synopsis of Hygiene", by Jameson and Parkinson, effectively covers the whole field of hygiene and public health and contains a mass of information not ordinarily made so readily accessible.³

The work is planned on conventional lines, and is terse in style, but essentials have not been sacrificed to brevity. Much use has been made of the tabular form of presentation. Useful summaries, taken at random, are: the organization of a health week, the control of diphtheria in an institution, the functions of a tuberculosis dispensary, measures of fly prevention, measure of uninhabitability of a dwelling *et cetera*. The chapter on personal hygiene is particularly good, and the medical officer of health, called on to write popular articles for the local Press during health week, will find excellent material in the summaries of such topics as properties of clothing, vitamins, family budgets and the like.

References are freely made to current and recent literature, and these are not grouped at the end of each chapter, but are interpolated in parentheses at the end of each relevant paragraph.

The work is well indexed; there are 20 pages of index to some 600 pages of subject matter. The appendices at the end contain ten pages of physics, calculations and tables of factors of weights and measures—items of information which have usually faded from one's mind since early student days and which, when required, have to be searched for through several books.

Although the general arrangement of the synopsis remains unaltered from previous editions, much of the book has been rewritten, especially those sections which deal with the law relating to public health. It is particularly those sections which are of least value to the Australian reader, for they contain much detail of acts of Parliament, regulations and model by-laws, which are inapplicable to this country, although they are of use as illustrating the principles of modern health legislation, and are instructive as showing what has been enacted "on the other side".

The page on small domestic sewage installations is disappointing, doubtless because these are not so important to the English sanitarian as they are to his Australian *confrère* in rural areas. References to such conditions as hydatid disease are scanty, and the chapter on milk production contains much that is inapplicable to our local conditions; so does that portion of the work dealing with food standards. To the Australian reader an Australian work of the same nature would be of great value, but in its absence this work of reference can be confidently recommended as a useful addition to the bookshelves. Certainly every medical library should contain a copy.

¹ "Statistical Methods for Research Workers", by R. A. Fisher, Sc.D., F.R.S.; Sixth Edition, revised and enlarged; 1936. Edinburgh: Oliver and Boyd. Medium 8vo, pp. 351. Price: 15s. net.

² "Diseases of the Nails", by V. Pardo-Castello, M.D., with foreword by H. Fox, M.D.; 1936. London: Baillière, Tindall and Cox. Royal 8vo, pp. 199, with illustrations. Price: 16s. net.

³ "A Synopsis of Hygiene", by W. W. Jameson, M.A., M.D., F.R.C.P., D.P.H., and G. S. Parkinson, M.R.C.S., L.R.C.P., D.P.H., with a section on Personal Hygiene by G. P. Crowden, M.Sc., M.R.C.S., L.R.C.P.; Fifth Edition; 1936. London: J. and A. Churchill Limited. Demy 8vo, pp. 623, with illustrations. Price: 21s. net.

The Medical Journal of Australia

SATURDAY, APRIL 3, 1937.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

AIDS TO HEARING.

DURING recent years much attention has been paid to deafness and to mechanical aids to hearing. Unfortunately the general practitioner is not often interested in either subject. If he is at all concerned about deafness, he probably strives for its prevention in the many ways that are open to him. When a deaf person consults him, a general practitioner realizes that the little that can be done should be attempted by a specialist in diseases of the ear, and he sends the patient, not too hopefully perhaps, to the aurist of his choice. If the patient has been deaf for a long time, he may perhaps acquiesce in the patient's purchase over the counter of one of the modern aids to hearing. This is a practice against which all medical practitioners should set their faces. They would not agree that their patients should select spectacles for themselves from the trays of a vendor, and they would at once exclaim that the error of refraction ought to be measured before suitable lenses could be chosen. They should be just as conservative about aids to hearing.

In September, 1933, there appeared in this journal a most useful paper by Dr. D. G. Carruthers on recent advances in the physiology of hearing and in the study of deafness, and on their practical application. This paper should be read in conjunction with a report recently issued by the Medical Research Council in Great Britain.¹ The report is issued on the recommendation of the Committee upon the Physiology of Hearing, and is the work of Dr. A. W. G. Ewing, Mrs. I. R. Ewing and Dr. T. S. Littler, of the University of Manchester. These authors point out that an investigation into the use and efficiency of hearing aids is necessarily concerned with three groups of vital problems that may be briefly summed up in the following questions: (i) How does the ear of a partially or severely deaf patient behave when stimulated by loud sounds, and to what extent can speech be made intelligible to him by amplification? (ii) What are the characteristics of the most efficient type or types of aid? (iii) What tests will ensure that the patient may be effectively advised as to what, if any, type of aid is suitable to his individual needs? They lay special emphasis on the first. They think that on the one hand the progress made, especially during the past decade, in physics and electrical engineering gives reason for hope that the great technical difficulties of hearing aid construction are not ultimately insuperable. On the other hand, there is increased knowledge of the difficulties on the human side, and efficiency in the use of hearing aids means "work within limits irrevocably fixed by nature". The most that can be hoped for is that an aid may be able to modify sound so as to bring it within the range of hearing that the patient retains. The first essential in the use of hearing aids is, from the physiological standpoint, the exploration and utilization to the maximum possibility of the range of frequencies and intensities to which the patient can listen without over-stimulation. The authors give details of the apparatus for testing pure tones and for measuring audibility and intelligibility of amplified speech. They discuss the relative

¹ "The Use of Hearing Aids", by A. W. G. Ewing, I. R. Ewing and T. S. Littler. The Medical Research Council of the Privy Council, Special Report Series, Number 219. London: His Majesty's Stationery Office; pp. 40. Price: 9d. net.

audibility of pure tones and speech, and the intelligibility of amplified speech to deaf and normal listeners. They give the results of the testing of hearing and hearing aids in the clinic of the Department of Education of the Deaf in the University of Manchester. No attempt will be made to give details of these findings; they are matters for the specialist. From the general practitioner's point of view the conclusions are of importance. These authors find:

1. That no hearing aid is capable in any circumstances of providing a deafened patient with the experience of hearing speech normally. It is therefore advisable that the help which can be given by the use of a hearing aid should be supported and strengthened by lip-reading.
2. The deafened adult who can follow conversation with a non-valve battery aid can as a rule be enabled to hear speech at a distance (in the theatre, church or at a lecture) with an efficient portable valve set.
3. That music heard through a hearing aid attains normality or distortion in direct proportion to the efficiency of the reproduction, *e.g.*, music heard through a non-valve battery aid is very markedly distorted and the aid tends to be rather easily overloaded whereas music heard through a portable valve aid with a relatively uniform frequency response approaches normality.
4. The intelligibility of speech heard through the best hearing aid is seriously diminished: (i) If the acoustic properties of the room where it is used are poor. (ii) If the speaker mumbles or talks with a non-resonant voice. (iii) By the presence of extraneous sound or general conversation masking the voice of the speaker to whom it is desired to listen.

The conclusion of the whole matter is that further research is required both from the standpoints of physics and medicine. In the present state of knowledge we can do no better than adopt the recommendations of the authors of this report. They hold that the conditions under which hearing aids are supplied to the public should include: (a) tests of the patient's response to pure tones of the speech range; (b) a standardized articulation test of the patient's capacity to respond to amplified speech under controlled conditions; (c) articulation tests with the instrument which it is proposed to supply to the patient for a period of trial; (d) familiarity, on the part of those responsible for the supply of aids, with the physical characteristics of each type of instrument, especially its frequency response and effective amplification. Finally, it would be well to remember that since the public can buy hearing aids over the counter without any

supervision, a progressive aural lesion may be masked and irreparable damage done. Preventive medicine propagandists have no lack of material when they deal with the ear and its function.

Current Comment.

THE MOTOR-CAR AND THE MEDICAL MAN.

THOUGH various expedients have been mooted to effect a reduction in the increasing numbers of motor-car accidents, it has to be noted that most of the methods so far employed are retaliatory rather than prophylactic; they aim mostly at inflicting salutary punishment on persons adjudged to be culpable after the damage has been done. Even then we may gravely doubt whether justice is invariably meted out with a level hand; the cases set down for trial are so many that they must be disposed of promptly, and neither defendants nor witnesses, without additional expense, may be given adequate opportunity to air their views. To cite one instance alone, the tests for drunkenness now applied are frequently fallacious, and there is as yet no agreement as to which of them, if any, is reliable.

It has been suggested by Lowell S. Selling¹ that a logical step would be to attack the problem from the other end—to subject all candidates for driving licences to a painstaking physical and mental examination and to institute suitable treatment where defects capable of remedy are found to exist. In other words, any necessary therapy would follow the examination, and the tests would not be, as at present, mainly eliminative in purpose. It might well be possible, under a properly devised system of this kind, to study the difficulties of the individual candidate and to remake him into a safe driver. At present, the investigation of the physical condition of drivers, since it is conducted only by laymen, can only be perfunctory; and in these circumstances the man who is somewhat arbitrarily denied the right to drive may justifiably complain that his personal liberties are infringed. No examining policeman can be expected to appreciate the fact that motor accidents may follow sudden emotional strains or transient physical crises which may never repeat themselves. It thus becomes the duty of authority to facilitate the compilation, by the medical profession, of accurate data which, in good time, will provide means of determining the boundary line between adequate and inadequate physical and mental capacity. Careful consideration has to be paid to the existence or otherwise of certain convulsive states, and since nearly all epileptics must live more or less under the eyes of their medical advisers, their control in this regard and the assessment of their ability to drive a motor-

¹ *The Journal of the American Medical Association*, January 9, 1937.

car are surely matters for the medical profession alone. It is likely also that physicians will find it necessary in the future to be prepared to carry out ocular examinations of wider scope than those in vogue at the ordinary police station. The police officers who perform eye examinations at present probably make no claim that they possess accurate means of detecting visual and ocular defects.

Enormously important also is the necessity for machinery to detect frank or incipient mental deviations in prospective drivers. It is improbable that at this time any but a few psychologists possess the necessary training to evaluate the mental qualities which make for bad or dangerous driving. Yet the opinion of a practitioner who has knowledge, perhaps extending over years, of an individual candidate may be of supreme value in determining whether some known antisocial characteristic makes such a one prone to accident or to violation of the traffic laws. Further, the existence of special neuroses associated with car-driving has for some years been recognized. From the point of view of driving ability, the presence of deafness is a matter for the consideration of experts only. The truth of this statement can be appreciated when it is realized that some persons suffering from paracusis seem to hear better in traffic than do normal people. In fine, the prophylaxis of motor-driving, if it may so be termed, is a legitimate field for our diagnostic and therapeutic activity.

THE RELATIONSHIP OF CHOREA AND RHEUMATIC ACTIVITY.

ALBURN F. COBURN AND LUCILE V. MOORE¹ publish an interesting paper which embodies the results of lengthy investigations into the aetiology of chorea. An original group of their rheumatic patients, the authors state, included ten who had choreic symptoms apparently unrelated to active rheumatism, and during the following five years none of these patients developed any sign of rheumatic activity. As the group of patients gradually enlarged, the fact became evident that chorea might affect rheumatic subjects without the appearance of any token of the acute disease. When the authors reviewed their figures, they found that of 114 patients with chorea, 34, who were kept under observation for periods ranging from two to ten years, developed no evidence of rheumatic activity other than attacks of chorea. Amongst a second group of 137 patients consecutively admitted to hospital as suffering from chorea, there were 69 attacks of chorea occurring in patients without a history or any of the accepted criteria of acute rheumatism. The other 68 attacks took place in patients who had previously exhibited rheumatic manifestations, but even here 29 of the attacks of chorea occurred during periods when the rheumatic processes were in abeyance. The

authors therefore take the view that roughly half of all the cases of chorea in New York City concern patients who are not susceptible to rheumatic fever. They noted many children who, although they had had from one to five attacks of chorea, were free of all stigmata of rheumatic disease and had no family history of it. As one might expect, the choreic attacks seemed in many instances to be closely associated with psychic trauma. The blood sedimentation rates and leucocyte counts of these children were usually normal. Amongst the cases of chorea occurring in proven rheumatic subjects, 40% commenced during periods of rheumatic inactivity, but here again the psychic factor was unmistakable. Again, the sedimentation rates and leucocyte counts were within normal range. Coburn and Moore deduce from these facts that chorea may be an uncomplicated disease which does not suffice for the recognition of the rheumatic subject or for the diagnosis of rheumatic activity.

In England, Sir Robert Hutchison has stated also that chorea is not an active manifestation of rheumatism, but has undoubted rheumatic relationships; he adds that rheumatic affections of the joints in common with chorea are, fortunately, almost unknown. Pearson and Wylie consider that the aetiology of rheumatism cannot be considered apart from chorea. They consider that it is difficult to regard the disorder as an inflammation of the brain, a meningo-encephalitis, without reservations. These observers consider that some biochemical explanation must be sought, especially as Moodie and Boyd have cited cases in which changes in the acid-base equilibrium of the blood have occurred in acute confusional states. Donald Paterson states unequivocally that the generally accepted theory is that chorea is a rheumatic encephalitis, and that a study of the clinical picture and pathology supports this belief.

The paper of Coburn and Moore gains added interest from the figures bearing on the subject of chorea published by Maddox in this journal on March 20, 1937, on pages 431 and 432.

THE ADELAIDE CONGRESS.

ONCE again prominence must be given to the fifth session of the Australasian Medical Congress (British Medical Association), to be held at Adelaide from August 23 to 28, 1937. The city of Adelaide and its surroundings are ideal for the holding of a congress. In a week or two we hope to publish an article that has been specially written for this journal by Dr. A. Grenfell Price, Master of Saint Mark's College in the University of Adelaide. Dr. Price has given a short history of South Australia and the early days of Adelaide. He has also described in a most attractive way the beauties of the city and its surroundings. The article will be illustrated by a series of pictures that cannot fail to give those who do not know Adelaide a desire to see it.

¹ The American Journal of the Medical Sciences, January, 1937.

Abstracts from Current Medical Literature.

THERAPEUTICS.

Serum Treatment of Pneumococcus Type I Pneumonia.

ACKNOWLEDGING the beneficial effects of specific antiserum in the treatment of pneumococcus Type I pneumonia since the concentrated form has been used, Maxwell Finland (*The American Journal of the Medical Sciences*, December, 1936) has attempted a definition of the effective dose of this important therapeutic agent. The adoption of values for the units of antibody in Types I and II antipneumococcus sera, which are defined in terms of an acceptable standard serum together with uniform methods of titration, has helped to fix the value of the unit within fairly narrow limits. The optimum dose was determined on the basis of the amount of antibody that brings about a rapid crisis in the largest percentage of cases without being unduly redundant. Due allowance was made for the influence of complicating factors which might mask the beneficial effects of the antibody. In cases in which treatment is begun on or before the fifth day of the disease, the blood culture being negative and the pulmonary lesion being limited to a single lobe, a dose of 75,000 units is adequate, provided that it is given within a few hours. If the pulmonary condition is more extensive but other conditions are the same, a dose of 150,000 units should be given. In the presence of a positive blood culture, double the above doses may be required. Even those doses of antibody may prove ineffective if spread over two or more days. After the fifth day of the disease the use of antiserum is hardly warranted, owing to the small number of cases that derive any benefit. Empyema may be prevented by early and adequate specific treatment.

Mandelic Acid as an Antiseptic in Urinary Tract Infections.

A CLINICAL study of the value of mandelic acid has been reported by Grayson Carroll *et alii* (*The Journal of the American Medical Association*, November 28, 1936). Acute pyelitis and cystitis are affected very promptly, chronic pyuria in many instances has responded in a remarkable manner to mandelic acid, whereas patients with suprapubic tubes or retention catheters have been improved but not rendered free of pus or bacteria. The condition of patients with retarded flow of urine improved wonderfully, and its pre-operative use in prostatic cases was beneficial but not always completely effective. The drug seems

to be most effective against the colon bacillus and less effective against the staphylococcus, *Bacillus proteus* and *Bacillus pyocyaneus*. Recurrence of pus and bacteria after the discontinuance of the medicine occurred in some instances, but the condition yielded promptly when the drug was again administered. In no instance has any toxic effect or impairment of function been noted during the treatment. In commencing treatment, the urine was examined microscopically and the nature of the infecting organism was determined; ammonium chloride, 0.5 gramme, was administered four times a day and the urine was tested until the pH of 5.5 or better was obtained, this usually being within twenty-four hours. Mandelic acid was then administered in a mixture. In some cases, nausea, diarrhoea or dysuria ensued and was considered to be due to the ammonium chloride, for a change in the acidifying agent to sodium biphosphate enabled the treatment to be continued. Whenever an alkaline condition persisted, a careful check of the food taken often revealed the inclusion of orange or lemon juice, spinach, beans or olives. When these were removed and the acidifying agent was increased, the proper acidity became established. The average number of days of treatment required to produce normal urine was 7.1. It is emphasized that mandelic acid is in no way a panacea for all urinary ills, as pyuria is only a symptom, and complete investigation to establish the diagnosis is essential to the correct use of the drug. From experimental work, caution is recommended in estimation of the dose and in cases of lowered renal function.

LEO P. DOLAN (*The Journal of the American Medical Association*, November 28, 1936) reports his experiences in treating sixteen cases of various types of urinary infection with ammonium mandelate. The drug is administered four times a day in a small quantity of water in two drachm doses of the 40% elixir, which is equivalent to three grammes of mandelic acid. The total fluid intake must not exceed one and a half pints, and preferably should be evenly distributed throughout the twenty-four hours. The patient is cautioned against all other drugs, foods and fruit juices which might readily produce an alkaline urine; no other restrictions seem necessary. Provided there is no physical incapacity, the patient can carry on his usual occupation. A close check is maintained on the daily cell count of the urine as well as the pH. One of the fundamental principles in the treatment of urinary tract infections is the elimination of existing obstructive lesions and the establishment of free drainage. The first case history here reported shows the value of the ammonium mandelate therapy in the presence of a pronounced degree of renal ptosis and obstruction. The remaining fifteen cases reported, how-

ever, do not give such favourable impressions. Seven cases of *Bacillus coli* infection thus treated gave six apparent cures with one partial cure. The other nine cases of various infections, due to staphylococci, *Streptococcus viridans*, diplobacilli and tubercle bacilli, gonorrhoea and *Bacillus proteus*, gave very indifferent results, not without complicating hæmaturia. The conclusion is that the treatment is of benefit, but caution is needed in its administration.

NEUROLOGY AND PSYCHIATRY.

Individual Differences in the Berger Rhythm.

F. LEMERE (*Brain*, Volume LIX, 1936, Part 3) has studied the capacity for Berger rhythm production in twenty-six normal subjects, forty psychotic patients, and in eighteen patients suffering from disseminated sclerosis. In the normal group it was found that the number of subjects showing "good" waves was about equal to that showing "poor" waves. In any one subject there was a remarkable similarity between the records taken at different times. Only four gave "good" waves at one time and "poor" waves at another time. Of these, two gave "poor" waves in relation to a state of acute anxiety. The question was raised as to whether there were any obvious personality differences between those having "good" and those having "poor" waves. The physical make-up, sex, intelligence, memory capacity, introversion or extroversion, and auditory or visual memory, suggested themselves as possible differentiating points; but no correlation could be found between these and the ability or inability to produce a waves. Although no special psychological or personality tests were given to these subjects, most of them were questioned from a psychiatric point of view. The impression was that "good" waves were produced in general by the cyclothymic or manic-depressive type of individual, while schizoid personalities gave "poor" waves as a rule. The ability to produce "good" waves seems to be a neuro-physiological characteristic which is related in some way to the affective capacity of the individual. In the psychotic group it was found that senile, arteriosclerotic or deteriorated patients had to be excluded from the group used for analysis, as such processes usually seemed to preclude the production of a "good" rhythm. When young patients in a mild or recovered stage of their illness were examined, a great difference was found in the waves produced by the two groups. Consistently "good" waves were given only by the manic-depressive patients. Schizophrenic patients, on the other hand, rarely gave "good" waves, and

then never consistently, and only when they seemed to be stimulated by such things as visits from relatives or changes in their ward routine. It seemed that the apathy and affective deficiency of the schizophrenic was the feature of the illness most clearly related to an absent or "poor" rhythm. The difference in the two groups could not be accounted for by different abilities to relax, as the hypomanic patients gave just as good waves as the depressed patients who were completely relaxed. Nor was the difference one of mental activity, for, as nearly as could be told, the manic patients were full of ideas, while the depressed and simple schizophrenic patients seemed to be able to keep from thinking too much during the tests. In the disseminated sclerosis group the records from five of the patients had to be disregarded, as again there were signs of mental deterioration that invalidated the findings. Of the remaining thirteen patients, six complained of emotional instability as an early and troublesome symptom. Five of these six patients had "good" Berger rhythms in contrast with the remainder of the group, who had average or "poor" rhythms. There was thus a definite and close relationship between a "good" Berger rhythm and the symptom of emotional lability.

The Mental Syndrome of Corpus Callosum Tumours.

In view of the diagnostic importance of the mental findings in callosal tumours, B. J. Alpers (*The Journal of Nervous and Mental Disease*, December, 1936) attempts to evolve a more specific definition of the callosal mental syndrome than that hitherto presented in the literature. That this syndrome is sufficiently striking to be useful is shown by the fact that a clinical diagnosis based largely upon the mental symptoms has actually been made in three instances and has been confirmed by autopsy. The mental symptoms in callosal tumours are characterized first and foremost by a deficit in the intellectual sphere, which is featured by inability to concentrate, difficulty in thinking, and, above all, by what may be called complete imperviousness to stimuli of all sorts. The latter is characterized by a failure to respond to stimuli of any sort, particularly auditory stimuli. In the milder cases this is revealed by an attitude of seeming indifference to all happenings in the external world. In the more advanced cases the patient responds not at all to auditory impressions, or his responses are not relevant. This is not due to an aphasic difficulty, because if the attention of the patient can be held long enough, it can be demonstrated by aphasic tests that the understanding of speech is still retained. It is due rather to a lack of appreciation of the stimuli directed at the patient, partly from lack of attention, and partly from what can

best be described as blocking similar to that seen in schizophrenic patients. The response to questions in advanced cases is irrelevant. The patient's attitude is frequently silly. Sometimes he turns his back on the examiner while being questioned; at others he smiles and nods affirmatively to all statements. Questions are repeated over and over, but no relevant answer is obtained. Inability to concentrate and to hold the attention focused on abstract or concrete matters of any sort is another feature. The attention wanders continually, so that it is well nigh impossible to complete a question and obtain response. The changes in personality and psychotic episodes which have been described in callosal tumours are merely incidental. They are not in themselves a part of the callosal syndrome, but result probably from invasion of the frontal lobes and from the increased intracranial pressure. It is not possible to state unequivocally that personality changes are not found at all in callosal tumours, but the probabilities are that they are chiefly produced by frontal lobe invasion.

Prolonged Narcosis in Manic-Depressive Psychosis.

T. J. HENNELLY (*The Journal of Mental Science*, September, 1936) advocates a more widespread application of prolonged "Somnifaine" narcosis to the manic-depressive disorders. The method of administration of the drug employed by the author is as follows. Treatment is carried out in a darkened single room, as it is found that by so isolating the patient the amount of the narcotic required to maintain sleep is reduced. Two cubic centimetres of "Somnifaine" are given twice daily—one injection in the morning and one in the afternoon. The injections are given intramuscularly in the thigh. If this amount is not sufficient, and the circumstances warrant it, a further two cubic centimetres are given without hesitation. If more than four cubic centimetres are considered inadvisable, eight cubic centimetres (two drachms) of paraldehyde are given instead. In any case, the quantity of "Somnifaine" given in the twenty-four hours never exceeds six cubic centimetres. After each injection of two cubic centimetres of "Somnifaine", ten to fifteen units of insulin are given subcutaneously and glucose *ad libitum* by the mouth. Particular emphasis is laid on daily urine examination throughout the period of the narcosis, a morning specimen being used. The presence of acetone in the urine calls for an increase in the dose of insulin of from ten to fifteen or twenty units. If after this the acetoneuria is not controlled, treatment is suspended until it is. If ketonuria is controlled, the likelihood of severe toxic symptoms arising is very small indeed. Fluid diet and plenty of glucose and

water are given throughout the course. Contraindications to treatment are arteriosclerosis, myocardial degeneration, respiratory disorders, and toxic and exhaustive conditions, from whatever cause. The author never employs the treatment in cases of acute delirious mania, or in any case in which the psychosis has reduced the patient to an exhausted state. Indications for stopping treatment are tachycardia, ketonuria (uncontrolled by increasing the insulin dosage), vomiting and pyrexia. The results obtained in 133 cases show that, roughly speaking, attacks of manic-depressive psychoses can be cut short in 30% of cases within a period of two to three weeks. Such being the case, the author concludes that prolonged narcosis has justified itself as a form of therapy in this psychosis, especially when our ignorance of its causation and our therapeutic limitations in regard to it are considered.

Insulin Shock Therapy in Schizophrenia.

G. SANGFELDT (*Psychiatrisch-neurologische Wochenschrift*, September 19, 1936) reports the results obtained in eight cases of schizophrenia treated by hypoglycæmic shock. Sakel's method was followed exactly. In three of the cases the treatment had to be abandoned after the production of only a slight degree of shock owing to complications in the form of dangerous convulsive states. In the remaining cases the treatment was carried out intensively, frequently at the risk of life. The results are not encouraging. In only one case, that of a twenty-one year old girl who had suffered for the past year from a hebephrenic-paranoid psychosis, did a good remission occur. The patient was still well six months after the conclusion of the treatment. In three cases of katatonia of less than a year's duration a transitory improvement in the mental state was obtained after a variable period of treatment. This improvement, however, involved only those symptoms, such as hallucinations and paranoid delusions, which are not specifically schizophrenic. Odd katatonic features persisted throughout the quite short (one to two weeks) remission; and one to two weeks after cessation of the treatment the patients relapsed into their former state. In the fifth of the cases in which treatment was completed, a definite case of paranoid dementia of recent origin, treatment was continued for three weeks without producing any change in the mental state. The author suggests that several of the cases described by Sakel were exogenous paranoid conditions, which should not have been labelled schizophrenic, and which would probably have shown a good remission without being subjected to the risk of treatment. In the light of these experiences the treatment has now been abandoned at the Oslo psychiatric clinic.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Section of Oto-Laryngology of the New South Wales Branch of the British Medical Association was held in the William Henry Crago Council Chamber, British Medical Association House, 135 Macquarie Street, Sydney, on October 13, 1936, Dr. H. S. KIRKLAND, the Chairman, in the chair.

Disorders of Speech.

Dr. J. J. WOODBURN read a paper on disorders of speech. He said that in a lecture some years ago he had attempted to deal with functional speech defects and those that were due to the abnormalities of the mechanism of speech. On this occasion he intended to include speech defects due to changes in the brain and nervous system connected with articulation and word perception.

To understand the nature of speech it was necessary to trace the development of the individual from infancy. Of the emotional conditions that led to the acquisition of speech in infancy, crying was the first. Crying occurred at birth, and later was employed as an indication of hunger, discomfort and pain. The same vowel was employed, but the tone varied so that discomfort could be distinguished from pain. Crying consisted of short interrupted inspirations and a prolonged expiration.

Dr. Woodburn said that laughing had been detected in infants as early as the twenty-third day; but it was acquired in about the sixth week and was well developed when the child was eight months of age. It was accompanied by facial expression, a gleam of the eye, glow of the skin, and consisted of a long inspiration and short and broken expirations. It was reflex in character, and could be assumed only with difficulty. In laughing and crying the sounds were of laryngeal origin.

Frowning had been noted at the end of the first month; then came expressions appropriate to fear, surprise, sulkeness and guilt. Blushing did not occur before the child was three years of age. As to gestures, negative side-to-side movements of the head occurred at the age of about thirteen months; affirmative nodding movements came later. The child learned to point in the second year.

Dr. Woodburn said that the above methods of expression were concurrent with speech development, such as babbling and crowing. At first vowels were babbled, then the consonants *g, m, b, d*; the difficult consonants, such as *w, s, z, f*, came later, in the second year. Parrot-like words were spoken; then mimic reading took place. The child next manufactured unintelligible words of its own. Words were repeated and objects named. The meaning of words acquired was stored in the auditory speech centre, and later words and symbols were connected. The child commenced a sentence with the first personal pronoun. Then adjectives, verbs, prepositions *et cetera*, were acquired. As a child learned to speak it endeavoured to produce the sounds that it heard, and thus kinæsthetic sensations became associated with the sounds produced by the speaker's voice.

Dr. Woodburn pointed out that writing was acquired similarly to speech, and by association with heard speech or symbolic words. The fingers, like the muscles of articulation, acquired a kinæsthetic sensation. The centre for the reception of kinæsthetic impulses from the muscles of articulation and upper limbs was situated in the lower half of the post-central convolution. To the common images of sound and visual images had to be added the tactile, olfactory and gustatory images. Articulate speech was transmitted by impulses through three sets of neurones: (i) the lower motor neurones, (ii) the upper motor neurones, and (iii) a super-centre, the so-called Broca's area or motor speech centre.

Learning to read and learning to write were thought to depend on a similar process. They became linked up with objects and ideas in the visual speech centre, which was situated in the supramarginal and angular gyri. The centre for the execution of writing was in the second

frontal convolution and was the super-centre for written speech which controlled the arm movements in writing. It was thought that these centres were linked up by tracts of white matter known as association fibres under the grey matter of cerebral convolutions.

All speech centres were found in the left side of the brain in normal right-handed people, but there was a coordination with the right side of the brain through the *corpus callosum*. In left-handed people the reverse occurred, but it seemed that coordination with the opposite side was not so great as in right-handed and ambidextrous people. Thus speech defects, such as stammering, were common in left-handed people, especially in those who were forced by parents and teachers to become right-handed. If incoordination of the two sides of the brain could be proved in right-handed people, this would pave the way to an explanation of stammering other than its attribution to psychological and physical causes.

In speech the following organs were successively involved: ear, auditory centre, auditory speech centre, motor speech centre, motor centre, cranial nuclei, speech muscles. In writing and reading the organs were eye, visual centre, visual speech centre, writing centre, motor cortex, anterior horn cells, arm muscles.

Dr. Woodburn then discussed dysarthria, a disorder of articulation which had to be clearly distinguished from aphasia. It was due to the defects of the executive centres in the cortex and their connexions, namely, the β cells, pyramidal tracts, cranial nuclei, cranial nerves and muscles; these defects might be due to disturbances of tone, like rigidity and lack of cerebellar control of postural and voluntary activity. Any of these disorders or a combination of them disturbed speech to some extent. Dysarthria was often associated with dysphagia and regurgitation of food through the nose. In dysarthria certain groups of muscles could not be used effectively for any purpose.

Coordinated movements of speech might be disordered by the cutting off of sensory impressions which normally reached the cerebral sensory cortex or by a failure of integration in these sensations when they arrived. In these circumstances the disorder of movement was not in the nature of weakness or loss of speech movement, but was a result of incoordination. Movements could still be made, but they were wrong movements. This occurred in aphasia, which was the term applied to disorders of comprehension and expression of the meaning of words or symbols employed in speech.

In motor aphasia there was a greater or less degree of loss of the power of expressing thought in speech. The speech musculature was not paralysed, and could still carry out all movements other than those of purposive speech. This loss of power might mean an inability to pronounce names (nominal aphasia), or a loss of all but a few recurrent utterances, such as "yes", "no", "thank you". The patient could see and know an object, but was unable to name it. Simple questions on familiar topics might be answered correctly, but complex ones might find the patient incapable of expressing himself. Lesions having this effect commonly involved Broca's area, which lay at the posterior end of the third left frontal convolution and at the foot of the ascending frontal convolution. When the posterior end of the second frontal convolution was involved the movements of writing were impaired or lost. Here, as in the case of the articulatory muscles, all other movements of the hand and fingers might be intact. These two disturbances of speech and writing might be present singly or simultaneously. Clinically it was commonly found that persons with motor aphasia could not understand what they read. They were "word blind", even in the absence of any lesion of the visual word centre. This symptom was due to an inability of the person to "say over" silently what he read.

On the receptive or afferent side of aphasia, since the auditory and visual impressions had lost their symbolic value, disorders of the activating mechanism of expression took place and the patient used wrong words, mixed up words in a sentence and might talk unintelligible jargon. Usually the lesion was so placed as to involve both the receptive and expressive mechanisms of speech, so that the so-called mixed forms of aphasia occurred.

Dr. Woodburn said that in certain cortical lesions immediately anterior to the cerebral motor cortex, not only might motor aphasia or agraphia result, but there might also be an inability to perform other purposive movements to order, although the muscles concerned were not paralysed for other movements, or for the same movements carried out spontaneously. For defects of this type, in which motor aphasia was included, the term apraxia had been coined. The subject of motor apraxia could carry out certain complex movements to order and could not handle familiar objects, such as a pipe, a cigarette, or a key appropriately, although he was aware of their nature and proper use.

On the afferent side also, not only might the significance of words heard be lost, but objects perfectly seen might not be identified by the subject or were wrongly identified. This defect was spoken of as agnosia, of which word deafness and word blindness were special varieties. Since these elaborations of received sensory impressions and the corresponding performance of purposive movements were functions of cortical cells, the various expressions of apraxia and agnosia were seen in patients with cortical lesions.

Dr. Woodburn then spoke of deaf mutism. He said that congenital mutism was not uncommonly hereditary, and was a sensoric form of aphasia in which the function of the word picture centre had not been developed; the child did not hear, so was unable to speak. Idiocy had to be excluded in cases of mutism. In deaf mutism impairment of speech was secondary to deafness. Deaf mutism had to be distinguished from congenital auditory imperception, in which the hearing was normal, though the patient lacked the power to understand the meaning of sounds, and which was associated with a characteristic speech defect called idiolossia. Mutism might occur as a complete loss of speech in a conscious patient without organic disease of the nervous system, as a result of extreme depression, mental retardation and hysteria.

Dr. Woodburn briefly mentioned palilalia, which was characterized by repetition of a phrase which the patient uttered with increasing rapidity; aphonia, in which phonation was lost but articulation was preserved, so that the patient talked in a whisper; and bradylalia, the slow, deliberate and clear speech typical of children learning to speak.

He next discussed stammering, which, he said, was considered by modern writers to be a nervous disorder rather than a mere physical speech defect; the complete sequence of mental processes was, as yet, inadequately known. Mabel Oswald maintained that stammering was dependent on a psychic cause, the stammer being the expression of some painful memory, which was wholly or partially repressed. E. L. Kenyon defined stammering as a perversion of the normal processes of speech, dependent on the emotional disturbances arising from the necessity of developing this speech function under the exacting conditions of social interrelations. Behind this exciting cause often lay congenital foundations and conditions of environment which tended to encourage the natural childish tendency to excitability and emotionalism. Kenyon stated that the immediate psychology of stammering involved: (i) emotional excitement, (ii) mental confusion, and (iii) the impulsive effort to talk while in this uncertain state of mind.

Stutterers were said to be superior in mentality and to have a superiority complex, but they were unable, on the spur of the moment, to put their thoughts into suitable words. It was said that the proper boy, in fear of making a mistake in company, might develop a stammer. Yet the street urchin with a large vocabulary of improper words and who was not self-conscious, would stammer in his attempt at invective. Some of the causes were said to be due to fear, shock to the mind, night terrors, over-correction or cruelty on the part of parents, guardians and teachers. But if all these conditions were necessary, why could a child become a stammerer by copying or imitating others? Stammering might be endogenous in origin, in other words, due to some constitutional or neuro-pathic tendency, or it might be exogenous in origin, environmental factors being involved. Shock and fright, illness

and strain, rheumatism and rickets might all cause stammering. Defective hearing and vision might also play a part. The strained and painful expression of the "half deaf" child was known to every teacher, and was intensified when the child was a stammerer; the two defects, however, were not usually coincident. Tonsils and adenoids played a very minor part.

Dr. Woodburn said that stammering was commoner amongst central Europeans, Germans and Poles, than in the Latin races. Members of negroid races rarely stammered, except in civilization, as in the United States of America. Jewish children of parents who had migrated were frequently stammerers.

The onset of stammering occurred between the fourth and fifth years, the period of latent speech development, and the majority of sufferers were active-minded children. Stammering occurred among the insane not more frequently than it did in normal people. It was associated with a strained and anxious expression in severe cases. Emotionalism and excitability were commonly present. A hypertonicity of the muscles generally existed, and sometimes there was even laryngeal spasm. Respiration was jerky owing to the inhibitory action of the chest muscles. Diaphragmatic action was disordered, and in severe cases almost all the muscles of the body might be tense and rigid. Facial twitchings, eye-blinking and clenching of the jaws existed in some cases, as well as jerky movements of the head.

In regard to treatment, Dr. Woodburn said that in almost all countries of importance much thought had been given to the problem of speech defectives. In New South Wales, with the exception of a few institutions, little had been done to segregate and teach these patients. It was important first to gain the confidence of the child and to overcome his fears. Young children should not be left alone at night. They should have pleasant surroundings, games, sympathetic friends and playing companions, and should be induced to relax their muscles and to rest at ease. Difficult words should be avoided, and the child should be taught to read aloud and to sing alone.

Correct breathing was essential to overcome stammering, just as it was necessary in public speaking and operatic singing. The important things to remember in normal breathing were: (i) downward movement of the diaphragm, (ii) forward movement control of the abdominal muscles, (iii) widening outwards of the lower six ribs, and (iv) upward movement of the upper portion of the chest. The lungs were elastic, spongy bodies that had no special activities of their own, and were controlled by the muscles of respiration. Lastly, the patient had to forget that he had a larynx, and aim at complete united action of respiratory and articulatory muscles.

Dr. Woodburn then discussed several other disorders of speech. Cluttering was the opposite to stammering; the child spoke quickly and with indistinct enunciation; the words poured forth so rapidly as to appear mutilated, unfinished and incorrectly articulated. The disorder might appear between the ages of five and puberty. In it there was a disproportion between thought and speed and the clutterer manifested no signs of anxiety. In stuttering thought outran speech and in cluttering speech outran thought.

Lisping or sigmatism was difficulty with the *s* sound, and was the commonest of all disorders of speech; it depended on wrong position of the tongue in relation to teeth and gums. Lisping might be due to malformation of the organs of speech or to pathological changes; it could also be due to defective perception or execution of sounds, or it might be neurotic or functional.

Dyslalia, or baby speech, was an inability to pronounce correctly certain consonants or certain combinations of these. It occurred in young children whose desire for utterance outran their capacity. The attention missed the unstratified initial elements of words, and the child heard only the most prominent part. The defective articulations might be perpetuated in normal children. For instance, "like" became "yike", "give" became "dive", *k* turned to *t*, and *g* turned to *d*. Adults frequently said "dis" and "dat" for "this" and "that".

Idioglossia was dyslalia of syllables and words. Generally the vowel sounds were pronounced, but so many of the

consonants might be mutilated, substituted or dropped that the language spoken by the child might become unintelligible. Only when this was a symptom of mental retardation was there need for despair. When a child's intelligence was normal, rapid progress was made in the correction of words and syllables.

Rhinolalia caused difficulty with the purely nasal sounds, *m*, *n* and *ng*. Its two main forms were: (i) *rhinolalia clausa*, which was due to any obstruction to the nasal passages, such as tonsils, adenoids, polypi, septal deflection, hypertrophied conchæ; and (ii) *rhinolalia aperta*, which was due to the soft palate failing to close the nasopharynx, so that all speech sounds, with the exception of *m*, *n* and *ng*, were incorrectly produced; this type was caused by cleft palate, but sometimes it was functional. A third form was *rhinolalia mixta*. The functional variety of rhinolalia might appear after the removal of tonsils and adenoids.

Dr. Woodburn said that negligent speech was indulged in by people of almost all countries in the world. To avoid it, parents should insist upon: (i) Distinct utterances and relative slowness in speech. (ii) Elimination of baby talk. (iii) Elision of syllables. (iv) The avoidance of slang. (v) No short replies or grunts for polite answers. (vi) Care in thought and speech and the avoidance of habits such as the use of "er" between words and such words as "you see". (vii) Toleration of the nervous child at the transition stage and at puberty. The transition stage was generally regarded at five to seven years of age. (viii) Attention to respiratory, pharyngeal, naso-pharyngeal, nasal, lingual, dental and spinal defects.

Parents blamed the school for negligent speech among their children, and teachers, in their turn, blamed the environment of the home. Improvement in speech depended on the platform, the pulpit and the stage. The cinema, unfortunately, had been a menace rather than a help to correct speech.

In conclusion, Dr. Woodburn said that, as correct enunciation of speech was a necessary qualification for a wireless announcer, so it should be for a school teacher, both in primary and secondary schools; and no university appointment should be filled by anyone who was guilty of negligent speech. The quality of a person's utterances was a true indication of his character.

MISS GRACE STAFFORD read a paper on remedial work in speech disorders which might be either organic or functional.

Organic disorders included defects of articulation, that is, inability to form particular consonant sounds or the substitution of one for the other. In treating these cases it was necessary to attack the trouble through the auditory as well as the kinetic sense; the first difficulty lay in making the student appreciate the difference between the right and wrong sound, then the difference between the right and wrong position of the organs of articulation. With the aid of a mirror, the movements of the organs of articulation could be adjusted; then each sound was corrected in turn, combined with vowels, and then words and phrases were formed. With patience and practice the sounds were mastered; but then the difficulty of habit formation arose. In one case in which the *r* sound was defective, the student could thrill for several seconds and a few minutes later say "fwom".

Idioglossia was an exaggerated form of dyslalia. Whole words were mispronounced; for example, a small student said "ok ak ekker air" (look at teddy bear). In this case it was necessary to exercise all the organs of articulation. Tongue games, such as taking the tongue for a walk inside and outside the mouth, lip games, then individual sounds were attacked. Those of which the child could see the formation easily, such as *b* and *t*, were first corrected. Rhythmic speech games followed, the child walking, skipping, hopping *et cetera*, to rhymes. The treatment lasted about six months.

Miss Stafford said that lisping (sigmatism), in its different forms, might be treated as above. Games, such as blowing into a hollow key held against the lips, blowing bubbles by holding a drinking straw in the mouth by means of the tongue (the lips must not touch the straw), using a straw to blow ping-pong balls about, whistling *et*

cetera, were all useful. When the child could make the *s* sound, then speech exercises might be arranged. The sound was combined with a vowel, then put in words and later in phrases. It was useless to attempt alliteration exercises until the child could make the sound.

Miss Stafford discussed next defective tone, such as occurred in nasal speech and cleft palate speech (rhinolalia). She said that in good normal speech the soft palate was held up against the wall of the pharynx, allowing the voice to escape through the mouth. If, for any cause, the palate was unable to carry out its duties, and hung down, sound escaped through the nose and an unpleasant nasal voice resulted. This was very marked in cleft palate speech. To correct this defect attention had first to be focused upon breathing, the breath stream being directed through the lips. Care had to be taken that the breath came easily from the base of the lungs; all bodily tension had to be avoided. Blowing exercises were devised, such as blowing ping-pong balls suspended from strings, blowing balls on a table or floating in water, holding a small sheet of paper against the wall by blowing upon it (Van Thal), and blowing water from one bottle to another (Greene). When these exercises had been practised sound was introduced. The patient was told to yawn and then to change the end of the yawn into the sound "ah"; then to repeat "arm, barm, ma, laugh" *et cetera*. The "oo" and "ee" sounds, which demanded a well lifted soft palate, were especially practised. Another useful exercise, using the lisper's bottle, was to place the rubber in the nostril, and repeat the alphabet; if the sounds were free of nasal intonation, bubbles would arise when *m*, *n*, and *ng* were articulated.

Miss Stafford then mentioned disturbances of vocalization such as occurred in aphonia. Courtlandt MacMahon's treatment was excellent in some forms of aphonia; it consisted in depressing the tongue with the middle finger of the right hand and with it the larynx, then holding the larynx down with the left hand and at the same time telling the patient to cough; when the sound strengthened the cough was finished with an "ah" sound; then the patient was told to speak, using a deep voice. A young woman's voice was completely restored after two such treatments.

Then there was phonesthesia—a fatigued voice. This was due to wrong use of the voice, which was forced, pitched too high, and badly placed. To correct this, the vowels were breathed through the resonator, and only when all sense of strain and constriction was eliminated might the voice be used. Correct breathing was essential in these cases.

Miss Stafford said that, leaving many organic disturbances of speech untouched, she proposed to pass on to those that were functional, namely, cluttering and stammering. Cluttering consisted of a rush of words so quickly spoken and so badly articulated that it was impossible to distinguish them. It should not be confused with stammering; but a clutterer could very easily become a stammerer. Dr. E. J. Boome stated: "Cluttering is a symptom of nervous haste, stammering of nervous fear. The clutterer speaks better the more he thinks about his speech; the stammerer the less he thinks about it." Cluttering, besides needing the speech exercises already mentioned, required relaxation.

The last disorder of speech, and the most tragic, was stammering. Now it was realized that stammering was a nervous disorder in which the sufferer underwent constant emotional conflict. This conflict caused lack of coordination and loss of rhythm, which affected the delicate mechanism of the speech apparatus. The cure lay not in any form of speech training, but in the removal of the cause of the imbalance. The imbalance might have been caused by a shock, the effects of which were suppressed. The stammerer became a centre of disorder, causing excessive nervousness, self-consciousness and fear. Fear was one of the strongest elements in stammering. Immediately following the shock, an attempt might have been made to speak; the sufferer found he could not express himself; this might occur again; then a fear, a doubt, arose about future attempts. A succession of failures broke down self-confidence, increased nervousness

and self-consciousness, and the whole personality was changed. As the stammerer grew older he often deliberately avoided contact with people and gradually withdrew into a morbid world of his own creation. His thoughts became introverted, he undervalued himself, his powers of concentration were weakened, he lived within a vicious circle, and the delicate mechanism of speech became less and less coordinated. The emotional blockade attacked any part of the speech apparatus from the diaphragm to the lips; the stammer was only an outward sign of an inward, intermittent nervous and emotional turmoil resultant from the first shock or inhibition.

Miss Stafford said that in the treatment of stammering it was necessary to overcome the many fears and complexes that had resulted from the first shock. Physical and mental relaxation were to be aimed at; the feeling of ease gradually eliminated the feeling of tenseness. Thus the feeling of tenseness disappeared and self-confidence grew. After a month or two of treatment the worried look in the face began to disappear and imbalance was gradually replaced by balance. Fears had to be freely discussed, even trivial fears, because their release meant the release of greater ones which were at the root of the stammer. The whole personality was changed and nerves and emotions became balanced. Then reeducation loosened more tensions and the stammer became less pronounced. With relaxation and reeducational measures, voice exercises might be given; but here the greatest of care had to be used, and all exercises had to be for developing coordination and rhythm in speech; the alliteration exercises of the past, more often than not, accentuated the trouble. Miss Stafford said it was a simple matter to teach even a bad stammerer to recite with ease and fluency, but unfortunately the same ease could not be carried into speech, and the disappointment felt by the stammerer might impede the progress of recovery. Breathing also had to be practised with the greatest of care; it had been thought that bad breathing caused the stammer, but now it was proved that the stammering caused the bad breathing. Breathing exercises should be given only to give balance and steadiness to the whole system.

In conclusion, Miss Stafford said that suggestion played its part in the cure of stammering, but that relaxation was the essence of treatment. She mentioned the work being done by the Stammerers' Club of New South Wales, which had been founded in 1935.

DR. OLIVER LATHAM thanked the speakers for their interesting lectures. He said he had had experience of Miss Stafford's successful methods a number of years ago and had reason to be grateful to her. He mentioned the value of proper breathing exercises in the treatment of asthma, and said that the personality of the teacher played a great part in the success of this type of treatment.

DR. D. W. H. ARNOTT agreed with Dr. Woodburn that the whole of the mind was concerned with the carrying out of each of the functions of the brain. This applied to speech. He referred to reestablishment of arm movements after experimental excision of the motor cortical centre as showing the value of establishing associated control. He said that Miss Stafford had shown that stammering had a psychic cause. Fear, self-consciousness, sense of inferiority *et cetera* only developed from about the age of seven years. These psychological appearances kept up the stammer. Relaxation was a valuable form of therapy, because it was backed by a suggestion of normal speech. Dr. Arnett wished to congratulate Miss Stafford on the methods she had evolved. Success depended largely on the personality of the teacher, and early treatment was valuable. He pointed out that there was already a speech-training centre at the Royal Alexandra Hospital for Children, which had been established for five years.

DR. J. STEIGRAD spoke of the modern treatment of cleft palate in which more attention was paid than formerly to good soft palate closure. The clinic at the Royal Alexandra Hospital for Children was getting good results with *rhinolalia aperta*. Possibly the cicatrix in the soft palate might reduce sensitivity to touch and account for part of the faulty speech. He pointed out that after removal of a large mass of adenoids the soft palate had

to become used to closing off a new large space, and possibly this might account for temporary nasal speech after the operation. He inquired why sometimes, after healing in a diphtheritic patient on whom tracheotomy had been performed, aphonia might persist although the mechanism appeared perfect. He had noticed that mentally retarded children with Little's disease improved in speech as they made progress in reeducation of their limb movements.

DR. E. P. BLASHKI thought that this meeting had been a very interesting and instructive one. It had been noted that patients who were bilingual might develop aphasia in one language only, while retaining perfect speech in the other tongue. There was an association in stammerers with left-handedness and occasionally with mirror-writing. He said that all the different sense centres should be used in teaching a child to speak, in order to build up as complete a memory as possible. The possibility of unsuspected deafness in a child with speech defect had to be borne in mind. He agreed with Miss Stafford's emphasis on the value of rhythm, and thought that Australian children were not sufficiently taught to speak rhythmically. Tonal modulation should also receive more attention, and its range should be widened. Utterance on a wrong note might spoil dramatic values altogether.

DR. R. C. WINN likened speech control to the driving of a motor-car. He compared the "unconscious control" to the "back-seat driver". He considered that medical men were inclined to study the mechanism of speech, disregarding the influence of unconscious mental conflicts. Unconscious influence transferred from the alimentary system entered into the cause of stammering and also of asthma; thus stammering was constipation of speech, and clattering was diarrhoea of speech.

DR. D. G. CARRUTHERS was grateful to the speakers for their excellent addresses. He welcomed the suggestion of organized assistance to patients with deficient speech. He said that he advocated proper speech training for those who had to speak a lot in public. Such training would be very beneficial, and he thought that people could undergo the training without bothering about the psychological cause of any difficulty that might exist.

Miss Stafford, in reply, said that there had recently been reported a greatly increased number of girl stammerers. In her opinion, the best form of treatment was relaxation, without attempts to investigate the deeper causes. Miss Stafford made a strong appeal for the establishment of a treatment centre, and said that there were a number of capable teachers willing to give voluntary service.

Dr. Woodburn, in reply, agreed with Miss Stafford that the physical side of stammering was the important one to attend to. Speakers needed practice with respiration and facial expression just as singers did. In reply to Dr. Blashki, he suggested that aphasia in one language in the bilingual must be an expression of some type of amnesic aphasia. He thought that speech rhythm should be fostered. Regarding the use of a device to cover a hard palate defect, he remarked that many people spoke well with artificial dentures. He thought that after diphtheria, in the case mentioned by Dr. Steigrad, reeducation would be needed to reestablish speech.

Obituary.

SAMUEL HARRY HARRIS.

DR. SAMUEL HARRY HARRIS, whose brilliant work on prostatic enlargement revolutionized the surgical treatment of that condition, died on December 25, 1936, as a result of an acute respiratory infection contracted in America when he was returning home after a journey to England and the continent of Europe. He was one of the few Australian surgeons who, by gaining an international reputation for himself, has shed lustre on the surgery

of this country. Like so many other pioneers, he encountered opposition and incredulity, but he lived to see his operation accepted and practised in very many countries.

Harry Harris, as he was invariably known, was educated in the first place at Sydney Grammar School. He was not only preeminent in scholarship, becoming captain of the school, but he took a keen interest in sport. When he passed on to the University of Sydney, he maintained his interest in sport and won his "blue" for cricket. In 1906 he graduated as Bachelor of Medicine and Master of Surgery, passing his final examination "with credit". He became a resident medical officer at Sydney Hospital and subsequently went into general practice in Enmore. While at Enmore he became attached to the South Sydney Women's Hospital. He intended to become a gynaecologist. In the course of his gynaecological work he became interested in the pyelitis of pregnancy and soon became expert with the cystoscope. He wrote a thesis for his degree of Doctor of Medicine on the pyelitis of pregnancy, and then relinquished gynaecology for urology. He was appointed to the staff of the Lewisham Hospital and was its urologist until his death. His originality of thought soon led him to devise a method of prostatectomy that was to give him world-wide recognition. Most of his communications were first published in this journal and then in journals overseas. Between 1913 and 1936 he contributed upwards of forty articles on genito-urinary subjects to medical journals in Australia, England and America. He took an immense amount of trouble with his writing, striving always for simplicity and for the right word to convey his meaning. He did not spare himself in his efforts to make other surgeons understand his methods, and they came to Lewisham Hospital from all parts of Australia and New Zealand. His last journey to the Old Country was in the nature of a crusade; he was badly in need of a holiday and probably worked too hard when he should have rested. Thus it was that he became a ready prey to the respiratory infection that caused his death. He bore his illness with fortitude, as those who knew him expected that he would. Harris was honorary urologist to the Marrickville Hospital. He was a foundation Fellow of the Royal Australasian College of Surgeons and a member of the editorial committee of *The Australian and New Zealand Journal of Surgery* and of *The British Journal of Surgery*. He was a member of the International Society of Urology. He leaves a widow and a son and three brothers, two of whom are members of the medical profession.

Dr. Archie Aspinall writes on December 30, 1936:

It is hard to believe that Harry Harris is no longer with us. To those of us who passed through the university with him and were later resident medical officers together at Sydney Hospital, his memory will not fade. Although he never appeared robust, he took an active part in all the social activities of the medical school and hospital.

He was a good batsman and won his blue for cricket. He was not a footballer; nevertheless he played for us in the inter-year games, and only a few weeks ago he laughed as we recalled the match in which he played

full-back and, to his own intense satisfaction and the amazement of the rest of the team, brought off a brilliant tackle and saved a certain try. He had a keen sense of humour and his cryptic remarks were much appreciated.

He was always keen on experimenting. When resident medical officer to the eye department of the hospital he successfully grafted skin from a newly born kitten to a patient who had been badly burnt. His interest in the improvement of the operation of prostatectomy no doubt started in his house surgeon days. Most of the patients admitted were extremely bad risks and the discomfort after operation great, and the after-treatment in most cases was left entirely to the house surgeon.

Harris was always willing to hand on his knowledge to all, and would go out of his way to help another surgeon to master his technique. His work will live after him.

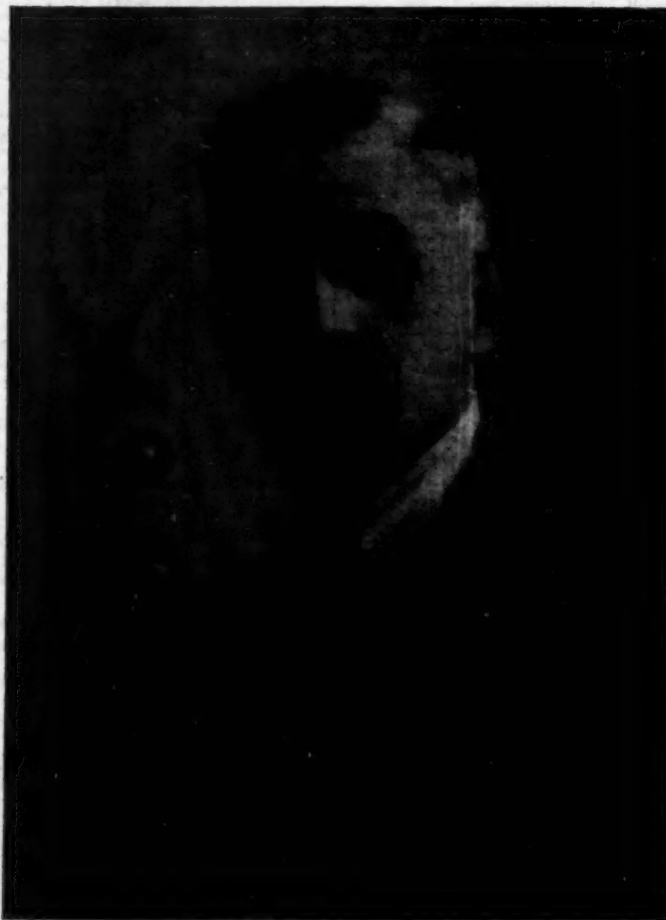
R.J.S. writes on January 4, 1937:

The death of S. Harry Harris is a most severe blow to

his numerous friends in the medical profession in Australia, and also to urological surgery both here and abroad.

Harry Harris was the pioneer of urology in this country, and he became both an inspiration to and a leader of those men who entrusted their future to the exclusive practice of this specialty. The writer remembers with gratitude the generously warm welcome extended to him by Harry Harris on returning to Sydney sixteen years ago to follow Harris as a pure urologist. This welcome was quite sincere, since it was followed by a willingness to impart technical and general information, which has always been a mark of the best men in our profession.

There is no doubt that the generous recognition of the status of urology by surgeons in Sydney in particular has been chiefly due to the brilliant efforts of both Harry Harris and the late Gordon Craig.



These efforts come in one way to fruition in this month of January, 1937, when an Australasian Society of Urology is to be formed in Sydney, having been preceded by an informal club designated the Sydney Urological Association, which has been active for nearly two years. It is quite certain that, had Harry Harris lived to attend this inaugural meeting, he would have been elected, unanimously and enthusiastically, as our first president.

In the brilliant light of Harris's technical achievement of sutural hæmostasis in suprapubic prostatectomy, practitioners may not realize that other problems in urology were subjected by Harris to inquiry from his very original and always very practical mind. Chief of these, perhaps, was his fluoroscopic study of neuro-muscular disturbances of the kidney, influenced by the work of Legueu and his co-workers in Paris. Harris's deductions from this study and the operative treatment recommended were known and made use of in practically all urological centres in the world.

I feel sure I am voicing the opinion of my seven urological colleagues in Sydney, and of the half dozen or so in the rest of Australia and in New Zealand, when I say that we are stunned by the immensity of our personal loss, so unselfishly helpful was he to all of us, so admirable his character. Equally immense is our loss in the professional sense, for there is little doubt that Harris's brilliant mind would have solved before long some of the practical problems which give us concern in our everyday work.

THOMAS CAMPBELL KER.

We regret to announce the death of Dr. Thomas Campbell Ker, which occurred on March 20, 1937, at Bendigo, Victoria. He graduated as Bachelor of Medicine and Bachelor of Surgery at the University of Melbourne in 1904. He was a member of the Victorian Branch of the British Medical Association from 1910 until the time of his death. In his ophthalmic practice at Bendigo he supplied the needs of a large district, and it was common knowledge among members of the medical profession and the laity that his findings were reliable. He endeared himself to many by his kindness and consideration.

Dr. W. J. Long writes:

Dr. T. C. Ker came to Bendigo thirty years ago with his widowed mother and sister to take up practice here in diseases of the eye, ear, nose and throat. He was appointed honorary ophthalmologist to the Bendigo Hospital. His practice increased so much that about ten years ago he took in Dr. H. E. Robinson as partner. This enabled him to more or less confine himself to eye work, to which he had the strongest leaning, and at which he was particularly good. In spite of a rather abrupt manner, which was really due to shyness, he was a very genial man and a very kind friend. Those of us who had the privilege of his friendship will miss him very much, not only in that sphere, but also in that of a most reliable consultant in everything pertaining to his branch of the profession.

GEORGE WILLIAM FREDERIC PAUL.

We regret to announce the death of Dr. George William Frederic Paul, of Brisbane, which occurred on March 19, 1937, at sea, near Fremantle, Western Australia.

JOHN KIRKPATRICK.

We regret to announce the death of Dr. John Kirkpatrick, which occurred on March 21, 1937, at Gordon, Victoria.

FRANK SHEPPARD BRIERLEY.

We regret to announce the death of Dr. Frank Sheppard Brierley, which occurred at Roseville, New South Wales, on March 21, 1937.

DONALD ALLAN CAMERON.

We regret to announce the death of Dr. Donald Allan Cameron, which occurred on March 21, 1937, at Brisbane, Queensland.

Post-Graduate Work.

NEW SOUTH WALES POST-GRADUATE COMMITTEE IN MEDICINE.

GENERAL REVISION COURSE, 1937.

The annual general revision course of the New South Wales Post-Graduate Committee in Medicine will be held from May 24 to June 4, 1937.

Programme.

Monday, May 24, 1937.

At the Robert H. Todd Assembly Hall, 135, Macquarie Street.

9.30 to 10.30 a.m.—Registration.

11 to 11.45 a.m.—"Maternal Welfare", Dr. E. S. Morris.

11.45 a.m. to 12.30 p.m.—"The Investigation of Tuberculosis Contacts", Dr. John Hughes.

At Sydney Hospital, Maitland Lecture Theatre.

2.30 to 3.30 p.m.—"The Treatment of Cardiac Pain", Dr. Harold Ritchie.

4 to 5 p.m.—"Infections of the Hand", Dr. Archie Aspinall.

At the University of Sydney, Great Hall.

8 p.m.—Conferring upon Professor J. C. Meakins the *ad eundem gradum* degree of M.D. by the Senate of the University of Sydney.

The second Sir Charles Clubbe Memorial Oration, by Professor J. C. Meakins (academic dress).

Tuesday, May 25, 1937.

At Sydney Hospital, Maitland Lecture Theatre.

9.15 to 10.15 a.m.—"The Management of the Enlarged Prostate by the General Practitioner", Dr. R. H. Bridge.

10.15 to 10.45 a.m.—"Injuries of the Thorax", Dr. M. P. Susman.

11 a.m. to 12.30 p.m.—"Fractures of Upper Extremity", Dr. C. E. Winston; "Fractures of Lower Extremity", Dr. A. M. McIntosh.

At Sydney Hospital, Theatre Clinic.

2.30 to 4 p.m.—"Circulatory Failure: Cause and Cure", Professor J. C. Meakins. Cases exemplifying various types of circulatory failure.

Wednesday, May 26, 1937.

At Saint Vincent's Hospital.

9.15 to 10.15 a.m.—"Blood Transfusion", Dr. A. H. Tebbutt.

10.15 to 11.15 a.m.—"The Treatment of Duodenal Ulcer, including Recent Opinions on the Use of Histidine", Dr. R. J. Taylor.

11.30 a.m. to 12.30 p.m.—"Common Injection Methods", Dr. V. M. Coppleson.

At Tresillian (Vaucluse) Mothercraft Training School.

2.30 to 4.30 p.m.—"The Care and Feeding of Infants and the Premature Baby", "Difficulties in Lactation and Artificial Feeding", Dr. Margaret Harper and Dr. L. G. Tait.

At the Robert H. Todd Assembly Hall, 135, Macquarie Street.

8 p.m.—"Circulatory Collapse: Cause and Cure", Professor J. C. Meakins.

Thursday, May 27, 1937.

At the University of Sydney, New Medical School, Bacteriology Department.

9.30 to 11.30 a.m.—"A Discussion of Recent Advances in Infectious Disease", Professor H. K. Ward, Bosch Professor of Bacteriology.

11.30 a.m. to 12.30 p.m.—"Vitamins", Associate Professor H. Priestley, McCaughey Associate Professor of Physiology.

At the University of Sydney, New Medical School.

2.30 to 4 p.m.—"Physiology and Pathology of Pulmonary Failure", Professor J. C. Meakins.

Friday, May 28, 1937.

At the Prince Henry Hospital, Nurses' Lecture Theatre.

9.30 to 10.15 a.m.—"The Treatment of Urinary Infections by Mandelic Acid", Dr. R. J. Silvertown.

10.15 to 10.45 a.m.—"Obesity", Professor C. G. Lambie, Bosch Professor of Medicine.

11 to 11.30 a.m.—"Retroversion of the Uterus in all its Aspects", Dr. Reginald Davies.

11.30 a.m. to 12.30 p.m.—"Hydatid Disease", Professor Harold Dew, Bosch Professor of Surgery.

2.30 to 4 p.m.—"Infectious Diseases: The Diagnosis and Management of Common Types", Dr. F. H. Wilson.

At the Robert H. Todd Assembly Hall, 135, Macquarie Street.

8 p.m.—"Physiology and Pathology of Pulmonary Failure: Its Clinical Importance and Therapeutics", Professor J. C. Meakins.

Monday, May 31, 1937.

At Lewisham Hospital.

9.30 to 10.30 a.m.—"Recent Advances in Anaesthesia", Dr. H. J. Daly.

11 to 11.45 a.m.—"The Sequelae of Head Injuries", Dr. C. G. McDonald.

11.45 a.m. to 12.30 p.m.—"Common Surgical Conditions of the Feet", Dr. J. Hoets.

At the University of Sydney, New Medical School.

2.30 to 4 p.m.—Clinico-physiological demonstration, Professor J. C. Meakins.

Tuesday, June 1, 1937.

At Royal Prince Alfred Hospital.

9.30 to 10.30 a.m.—"Dangerous Drugs", Dr. Allan Walker.

10.30 to 11 a.m.—"Management of Fractures in the Region of the Ankle Joint", Dr. Lennox Teece.

11.15 a.m. to 12.30 p.m.—"The Diagnosis of Urethritis in the Male and its Treatment", Dr. N. M. Gibson.

Afternoon.—Theatre clinics on operations frequently performed will be given by several surgeons, including Sir John McKelvey, Dr. Hugh Poate, Dr. B. Edye and Dr. F. A. Maguire. Opportunities will be given to members of the course to discuss details of technique.

At the Robert H. Todd Assembly Hall, 135, Macquarie Street.

8 p.m.—"Systemic Significance of Renal Insufficiency", Professor J. C. Meakins.

Wednesday, June 2, 1937.

At The Women's Hospital, Crown Street.

9.30 to 10.30 a.m.—"The Female Sex Hormones", Dr. T. Dixon Hughes.

10.45 to 11.30 a.m.—"Antenatal Care and Management", Dr. A. J. Gibson.

11.30 a.m. to 12 noon.—"Puerperal Infections", Dr. H. C. E. Donovan.

Afternoon.—Golf match. A cup has been presented for annual competition, to be known as the "New South Wales Post-Graduate Golf Cup". It will be an eighteen holes stroke competition. Fuller details will be published later.

Thursday, June 3, 1937.

At the Royal North Shore Hospital of Sydney.

9.30 to 10.30 a.m.—"The Management of Surgical Emergencies and Pregnancy, and the Treatment of Coma and Precoma in Diabetes", Dr. W. W. Ingram.

10.45 to 11.45 a.m.—"Fractures of the Spine", Dr. S. H. Scougall.

11.45 a.m. to 12.45 p.m.—"Leucorrhoea and its Treatment", Dr. H. Z. Throsby.

2 to 3 p.m.—"Diagnosis in Chest Diseases", case demonstration, Dr. W. Cotter Harvey.

3 to 4 p.m.—"Common Skin Diseases and their Treatment", Dr. F. C. Florance.

At the Robert H. Todd Assembly Hall, 135, Macquarie Street.

8 p.m.—"Anaemia as a Common Disability", Professor J. C. Meakins.

Friday, June 4, 1937.

At the Royal Alexandra Hospital for Children.

9 to 10 a.m.—Removal of tonsils and adenoids (three theatres), Dr. Ramsay Beavis, Dr. N. H. Meacle, Dr. C. Wesley.

10 to 11 a.m.—"The Treatment of Intussusception", Dr. P. L. Hipsley.

11.15 to 11.45 a.m.—"Some Characteristics of Pneumonia in Childhood", Dr. Edgar Stephen.

11.45 a.m. to 12.15 p.m.—"The Treatment of Imperfect Descent of the Testes", Dr. H. G. Humphries.

12.15 to 12.45 p.m.—Selected medical cases, Dr. R. A. R. Green.

2.30 to 4.30 p.m.—Clinical and pathological conference, Professor J. C. Meakins and Dr. F. Tidswell.

Supervisor of course, Dr. N. R. Wyndham.

The fee for the course, exclusive of the evening lectures by Professor Meakins, is £4 4s. or, including the evening lectures by Professor Meakins, £5 5s. For resident medical officers of hospitals and those not engaged in active practice the fee for the course only will be £2 2s. The fee for mornings, afternoons or evenings, or one week of the course only will be £2 2s. Tickets for the ceremony in the great hall of the university on May 24, for any member of the course and a friend, may be had on application.

Railway concession tickets are available under the usual conditions to those attending the course. Several leading hotels have granted concession rates to members of the course, whilst, if accommodation is available, residence may be obtained for the period of the course at the university colleges.

Those eligible to compete for the New South Wales Post-Graduate Golf Cup include all medical practitioners attending any post-graduate course at the time of the competition, or those who have so attended during the previous twelve months; all members of the New South Wales Post-Graduate Committee in Medicine and all medical practitioners associated with its activities; all members of the staffs, both resident and honorary, of the hospitals associated with the activities of the committee; and all teachers in the Faculty of Medicine of the University of Sydney. All arrangements for the holding of this competition are being made on behalf of the committee by Dr. Sydney Jones.

Application to attend the course should be made to the Secretary, the New South Wales Post-Graduate Committee in Medicine, the University of Sydney. Applicants should state their Sydney address, whether it is desired that accommodation shall be arranged, whether railway concession tickets are desired, and whether the concessions are for the member alone or for other members of his family. Exchange should be added to all country cheques.

Correspondence.

AN EXPLANATION.

SIR: May I crave space to make good an omission from my article on "Interrelationships of the Sex Hormones", in your issue of December 10, 1936? The obvious reference to the source of the chemical schema should have read:

"Adapted with modification from Samson Wright's 'Applied Physiology', sixth edition."
My attention has been drawn to this omission by Oxford Medical Publications.

Yours, etc.,

C. STANTON HICKS.

Department of Pharmacology and Human Physiology,
The University of Adelaide,
Adelaide,
March 16, 1937.

VARICELLA AND HERPES ZOSTER.

SIR: The report (THE MEDICAL JOURNAL OF AUSTRALIA, March 13, 1937) by Dr. A. H. Finger of cases of varicella which apparently could be traced to contagion from a case of *herpes zoster* prompts me to report three cases of association of the two diseases (or the two forms of this disease).

On August 16, 1936, Mrs. I.J.A. consulted me on account of a well developed herpes rash over the area of distribution of the eighth intercostal nerve. On September 5—twenty days later—I saw her husband and child, who each had a profuse crop of varicella vesicles.

On June 2, 1936, S.J.M. saw me on account of pain and rash over the area of distribution of the seventh intercostal nerve. He had a well-defined *herpes zoster* rash. On June 26—twenty-four days later—I saw two of his children, who had well-marked varicella rashes in the pustular stage. The remaining members of the family developed varicella in the course of the next few days.

On August 21, 1933, A.E., a publican, was admitted to hospital with a very severe attack of herpes over the area of distribution of the trigeminal nerve. This publican had recently transferred the lease of his hotel, and in preparation for his departure had been working in close contact with the hotel porter, who was seen by me on September 10—twenty days later—with an attack of varicella.

That the laity realizes the association of the two diseases is evidenced by the fact that a trained nurse under my care recently with a severe attack of herpes, when told that the disease was allied to chickenpox, replied that her mother, when told that the patient had shingles, replied: "She is sure to have a bad time, as she never had chickenpox when she was a child"; and her prophecy was amply fulfilled.

Yours, etc.,

HAROLD W. WARD.

York,
Western Australia,
March 19, 1937.

A DISCLAIMER.

SIR: I should be grateful if you would allow me through your columns to entirely disclaim any personal responsibility for the report by Dr. H. T. Illingworth appearing in THE MEDICAL JOURNAL OF AUSTRALIA of March 6, entitled "Analgesia during Labour".

It is true that Abbotts Laboratories Limited kindly supplied me with some "Nembutal" for use during my month of duty (October, 1936) at the Queen's Home.

Dr. Illingworth's report includes cases quite outside my month of duty. No kind of statistical investigation regarding "Nembutal" or scopolamine was authorized by me for publication. Obviously, a month of duty was our only association, and speaks for itself. Moreover, no report was ever submitted to me, nor permission given for any such publication, and I wish to dispel any possible misapprehension.

Yours, etc.,

ROLAND BEARD,

F.R.C.S. (Edin.), F.R.A.C.S., F.C.O.G.,
Honorary Obstetrician, Queen's
Maternity Home, Adelaide.

March 20, 1937.

Proceedings of the Australian Medical Boards.

VICTORIA.

A MEETING of the Medical Board of Victoria was held on March 3, 1937.

An application for registration made by Anna Lewin, L.R.C.P. et S. (Edinburgh), L.R.F.P.S. (Glasgow), 1935, was refused for the reason that it appeared to the Board that the applicant had received her diploma after less than five years' study in the United Kingdom.

Consideration of applications made by Doris A. Selby and Laurence C. Holland was deferred, less than one month having elapsed in each case since the applicants gave notice of their intention to apply.

The following additional diplomas were registered: Alexander J. M. Sinclair, M.D. (Melbourne), 1936; James A. Smeal, M.R.C.P. (London), 1935; John B. Turner, M.D. 1930, M.S., 1932 (Melbourne), F.R.C.S. (England), 1933.

The death of William Robert Ray on February 8 last was reported.

Advice was received from the Crown Solicitor to the effect that, in his opinion, there is no reason at common law or contained in the *Medical Acts* why any person should be refused registration by the Board solely on the ground that he is not a British subject.

It was decided to approve the resumption of practice by Harry L. E. Davis.

A report was received that Dr. Claridge, of Malvern, had covered an unregistered person and issued certificates without seeing the patients to whom they related, and the Board directed that inquiries be made into this matter.

A letter was received from the Commonwealth Director of Health expressing doubt as to the interpretation placed on the provisions of the *Medical Acts* regarding the prohibition of the registration of persons who have obtained an otherwise registrable qualification after less than five years' regular medical and surgical study, and suggesting an amendment of the section to clarify the position. Dr. Cumpston added that the diploma of the Scottish Conjoint Board was registrable in the Federal Capital Territory without any proviso as to the period of study, but that it was proposed to consider the question of amending the ordinance.

PORTRAIT OF PROFESSOR W. A. OSBORNE.

It is the desire of the many friends and old students of Professor Osborne that his portrait should be painted and presented to him, and a commission has been placed with Mr. McInnes. A subscription list has been opened, the subscriptions being fixed at half a guinea. Any friends and old students wishing to be associated with this recognition of Professor Osborne's long services to the University of Melbourne are invited to address cheques to one of the undersigned, Medical Society Hall, 426, Albert Street, East Melbourne, C.2.

B. T. ZWAR.
H. B. DEVINE.
ALAN NEWTON.
VICTOR HURLEY.
SIDNEY SEWELL.

Additional subscriptions have been received from the following: W. G. Upjohn, G. Springthorpe, G. E. Foreman, C. B. Melville, W. J. Penfold, J. F. McKeddie, D. Silberberg, A. Sherwin, F. L. Davies, Hugh Devine, J. S. Reid, D. O. Shiels, Ellen Kent-Hughes, F. G. Donovan, E. Woodall Gault, G. B. Bearham, Lockyer Potter, E. G. Derman, J. L. R. Carter, J. Garvan Hurley, S. F. Ridley, Felix Meyer, A. J. Fargie, Henry Laurie, J. M. Lewis (£1 1s.).

The total amount received is now £102 7s. 6d.

Medical Prizes.

THE GIFFORD EDMUNDS MEMORIAL PRIZE.

THE Gifford Edmunds Memorial Prize for 1936 has been awarded to Dr. J. Bruce Hamilton, of Hobart. This prize, for which any medical practitioner in the British Empire may compete, is awarded every two years by the Royal London Ophthalmic Hospital for an essay on some modern aspect of ophthalmology; special attention is paid to original work recorded in the essay. The winner of the prize is invited to give the Gifford Edmunds Oration in the following year. The subject for the 1936 essay was "The Significance of Heredity in Ophthalmology". Dr. Hamilton based his essay on pedigrees of patients with inherited eye diseases found in Tasmania.

NOTICE.

THE jubilee meeting of the North Eastern Medical Association, New South Wales, will be held at Lismore on April 10 and 11, 1937. Dr. S. A. Smith and Dr. H. R. G. Poate will give lectures on these days. An invitation is extended to all ex-members of the association to be present.

Books Received.

ORGANIC CHEMISTRY FOR MEDICAL STUDENTS, by G. Barger, M.A., D.Sc., LL.D., F.R.S.; Second Edition; 1936. London: Gurney and Jackson. Demy 8vo, pp. 261. Price: 10s. 6d. net.

INFANTILE PARALYSIS AND CEREBRAL DIPLEGIA. METHODS USED FOR THE RESTORATION OF FUNCTION, by Elizabeth Kenny, with a foreword by H. J. Wilkinson; 1937. Australia: Angus and Robertson Limited. Demy 8vo, pp. 143, with illustrations. Price: 21s. net.

OPERATIVE SURGERY, by J. S. Horsley, M.D., LL.D., F.A.C.S., and I. A. Bigger, M.D., with contributions by C. C. Coleman, M.D., F.A.C.S., J. S. Horsley, junior, M.D., A. I. Dodson, M.D., F.A.C.S., and D. M. Faulkner, M.D.; Volumes I and II, Fourth Edition; 1937. St. Louis: The C. V. Mosby Company. Super royal 8vo, pp. 1411, with illustrations. Price: \$15.00 net.

Diary for the Month.

- APR. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 APR. 7.—Victorian Branch, B.M.A.: Branch.
 APR. 7.—Western Australian Branch, B.M.A.: Council.
 APR. 9.—Queensland Branch, B.M.A.: Council.
 APR. 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 APR. 20.—New South Wales Branch, B.M.A.: Ethics Committee.
 APR. 21.—Western Australian Branch, B.M.A.: Branch.
 APR. 21.—New South Wales Branch, B.M.A.: Clinical Meeting.
 APR. 25.—Queensland Branch, B.M.A.: Council.
 APR. 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 APR. 28.—Victorian Branch, B.M.A.: Council.
 APR. 29.—New South Wales Branch, B.M.A.: Branch.
 APR. 29.—South Australian Branch, B.M.A.: Branch.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xx to xxi.

CLEVE HOSPITAL BOARD, CLEVE, SOUTH AUSTRALIA: Medical Practitioner.

PUBLIC SERVICE BOARD, ADELAIDE, SOUTH AUSTRALIA: Registrar.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 155, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Prudential, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY Hospital are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 265, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £3 for Australia and £2 5s. abroad per annum payable in advance.